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ABSTRACT

This proceedings includes the following papers and carousel presentations: "Information Technology Related Career Development Needs of Secondary Vocational Teachers" (Joe W. Kotrlik, Betty C. Harrison, Donna H. Redmann, Cindy S. Handley); "Do Gender and Academic Risk Matter? Influences on Career Decision Making and Occupational Choice in Early Adolescence" (Jay W. Rojewski, Roger B. Hill); "Factors Perceived to Influence the Use of the Program of Activities" (Robert M. Torres, Thomas J. Dormody); "Sources of Influence on Students' Enrollment Decision in Post-secondary Vocational-Technical Education" (Brian A. Sandford, Robert M. Torres); "Linking the NCTM [National Council of Teachers of Mathematics] Standards to Emerging Vocationalism: A Promising Equation?" (Victor M. Hernandez-Gantes); "Integrating Academic and Vocational Education: An Investigation of the Attitudes and Curricular Values of Administrators and Faculty in the Wisconsin Technical College System" (Jerrilyn A. Brewer); "Gatekeepers of Family and Consumer Sciences/Secondary Home Economics Programs" (Susan K. Webber); "The Role of Social Awareness in the Employment Success of Adolescents with Mild Mental Retardation" (Rhonda S. Black, Jay W. Rojewski); "Motivational Needs of Students Enrolled in Agricultural Education Programs in Georgia" (Jeff Turner, Ray V. Herren); "Impact of Environmental Variables on Community College Dental Assisting Students Who Are At Risk" (Debra S. Daniels); "Student Perceptions of the Affective Experiences Encountered in Distance Learning Courses" (J.D. Thomerson); "Teacher Preparation for Workplace Skill Instruction" (Marcia A. Anderson); "Lessons Learned from an Analysis of Youth Apprenticeship Programs" (Clifton L. Smith); "Evaluating and Improving Tech Prep: The Minnesota Self-Assessment Model" (David J. Pucel, James Brown); "Teacher Characteristics and Activities that Contribute to Students' School-to-Work Transition" (B. June Schmidt, Curtis R. Finch); "Perceptions on Delivery of Biotechnology Instruction" (Dan Brown, Mike Kemp); "Linking the NCTM Standards and Career Curricula: Is Your School Ready?" (Victor M. Hernandez-Gantes); "Model Preservice Teacher Education Program for Agricultural Education" (Kirk A. Swortzel); "A Qualitative Evaluation of Temple University's Program VITAL, a Field-Based, Performance-Based Vocational Teacher Education Program" (Gloria Heberley); and "A Longitudinal Study of Classroom Problems and Strategies" (Betsy Orr, Cecelia Thompson, Dale Thompson). Many papers include substantial bibliographies. (MN)

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AVERA

American Vocational Education Research Association

1997

PROCEEDINGS

American Vocational Educational Association

1997 Annual Convention
Las Vegas, Nevada

December 11-14, 1997

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AVERA

American Vocational Education Research Association

PROCEEDINGS

American Vocational Educational Association

1997 Annual Convention
Las Vegas, Nevada

December 11-14, 1997

Wanda Stitt-Gohdes
AVERA President Elect/Program Chair and Proceedings Editor
University of Georgia

Notes from Program Chair

The 1997 American Vocational Education Research Association (AVERA) Annual meeting was held December 11-14, 1997, in Las Vegas, Nevada, as part of the American Vocational Association (AVA) Annual Convention. The theme for the AVA Convention was "Creating Futures."

AVERA is the research section of the New and Related Services Division of AVA. Our research section had four research paper sessions, two doctoral research sessions, one Grand Carousel section, the *Journal for Vocational Education Research* writing/ reviewing session, the past presidents' open forum, and a business meeting. The complete program appears later in this document. The 38 papers submitted for presentation consideration were all subjected to a blind, peer-review process. This resulted in the selection of 23 papers for presentation, each of which was evaluated by three reviewers. The papers contained in these proceedings are from those authors who wished to have their papers published.

I am grateful to a number of persons for their support in making this 1997 conference a success: all those who submitted papers for review; the 31 reviewers; the session chairs and facilitators; and our current, capable AVERA President Donna Redmann for her wisdom and experience as program chair. I am also especially thankful for the technical expertise of Terri Mason and Joan Taylor, administrative support personnel in the Department of Occupational Studies at The University of Georgia, for their help in preparing these proceedings and consistent sense of humor throughout the last year!

It has been an honor to serve AVERA as the 1997 Program Chair. While sometimes the deadlines made the work onerous, my load was always lightened by each of you who were willing to say "yes" when I asked for your help!

Wanda L. Stitt-Gohdes
AVERA President-Elect and Program Chair
American Vocational Education Research Association
1997 AVERA/AVA Annual Convention

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TABLE OF CONTENTS

NOTES FROM PROGRAM CHAIR ii

AGENDA vi

RESEARCH PAPERS PRESENTED

INFORMATION TECHNOLOGY RELATED CAREER DEVELOPMENT NEEDS OF SECONDARY VOCATIONAL TEACHERS
Joe W. Kotrlik, Betty C. Harrison, Donna H. Redmann, and Cindy S. Handley 3

DO GENDER AND ACADEMIC RISK MATTER? INFLUENCES ON CAREER DECISION-MAKING AND OCCUPATIONAL CHOICE IN EARLY ADOLESCENCE
Jay W. Rojewski and Roger B. Hill 15

FACTORS PERCEIVED TO INFLUENCE THE USE OF THE PROGRAM OF ACTIVITIES
Robert M. Torres and Thomas J. Dormody 25

SOURCES OF INFLUENCE ON STUDENTS' ENROLLMENT DECISION IN POST-SECONDARY VOCATIONAL-TECHNICAL EDUCATION
Brian A. Sandford and Robert M. Torres 37

LINKING THE NCTM STANDARDS TO EMERGIN VOCATIONALISM: A PROMISING EQUATION?
Victor M. Hernandez-Gantes 49

INTEGRATING ACADEMIC AND VOCATIONAL EDUCATION: AN INVESTIGATION OF THE ATTITUDES AND CURRICULAR VALUES OF ADMINISTRATORS AND FACULTY IN THE WISCONSIN TECHNICAL COLLEGE SYSTEM
Jerrilyn A. Brewer 59

GATEKEEPERS OF FAMILY AND CONSUMER SCIENCES/SECONDARY HOME ECONOMICS PROGRAMS
Susan K. Webber 65

THE ROLE OF SOCIAL AWARENESS IN THE EMPLOYMENT SUCCESS OF ADOLESCENTS WITH MILD MENTAL RETARDATION
Rhonda S. Black and Jay W. Rojewski 75

MOTIVATIONAL NEEDS OF STUDENTS ENROLLED IN AGRICULTURAL EDUCATION PROGRAMS IN GEORGIA
Jeff Turner and Ray V. Herren 89

IMPACT OF ENVIRONMENTAL VARIABLES ON COMMUNITY COLLEGE DENTAL ASSISTING STUDENTS WHO ARE AT-RISK
Debra S. Daniels 103

STUDENT PERCEPTIONS OF THE AFFECTIVE EXPERIENCES ENCOUNTERED IN DISTANCE LEARNING COURSES
J. D. Thomerson 117

TEACHER PREPARATION FOR WORKPLACE SKILL INSTRUCTION
Marcia A. Anderson 131

LESSONS LEARNED FROM AN ANALYSIS OF YOUTH APPRENTICESHIP PROGRAMS
Clifton L. Smith 139

CAROUSEL PRESENTATIONS

EVALUATING AND IMPROVING TECH PREP: THE MINNESOTA SELF-ASSESSMENT MODEL
David J. Pucel and James Brown 153

TEACHER CHARACTERISTICS AND ACTIVITIES THAT CONTRIBUTE TO STUDENTS' SCHOOL-TO-WORK TRANSITION
B. June Schmidt and Curtis R. Finch 155

PERCEPTIONS ON DELIVERY OF BIOTECHNOLOGY INSTRUCTION
Dan Brown and Mike Kemp 157

LINKING THE NCTM STANDARDS AND CAREER CURRICULA: IS YOUR SCHOOL READY?
Victor M. Hernandez-Gantes 159

MODEL PRESERVICE TEACHER EDUCATION PROGRAM FOR AGRICULTURAL EDUCATION
Kirk A. Swortzel 161

A QUALITATIVE EVALUATION OF TEMPLE UNIVERSITY'S PROGRAM VITAL, A FIELD-BASED, PERFORMANCE-BASED VOCATIONAL TEACHER EDUCATION PROGRAM
Gloria Heberley 163

A LONGITUDINAL STUDY OF CLASSROOM PROBLEMS AND STRATEGIES
Betsy Orr, Cecelia Thompson, and Dale Thompson 165

New and Related Services Research - Section Program
1997 AVA Annual Convention
Las Vegas, Nevada
December 11-14, 1997

✷ Wednesday, December 10 ✷

1:30 - 5:00 p.m.--Convention Center, Room N202
Journal of Vocational Education Research Editorial Board Meeting

Chair: James Flowers, Editorial Board Chair, North Carolina State University, Raleigh, NC
Facilitator: Jay W. Rojewski, JVER Editor, The University of Georgia, Athens, GA

✷ Thursday, December 11 ✷

7:00 - 10:00 a.m.--Convention Center, Room N219
AVERA Executive Committee Breakfast Meeting (By Invitation only)

Chair: Donna H. Redmann, AVERA President, Louisiana State University, Baton Rouge, LA
Facilitator: Wanda L. Stitt-Gohdes, AVERA President-Elect, The University of Georgia, Athens, GA

1:30 - 3:00 p.m.--Convention Center, Room N236
Continuing Professional Development

Topic 1: Information Technology Related Career Development Needs of Secondary Vocational Teachers
Speakers: Joe W. Kotrlik, Betty C. Harrison, Donna H. Redmann, Cindy S. Handley, Louisiana State University, Baton Rouge, LA
Topic 2: Writing/Reviewing for the Journal of Vocational Education Research
Speaker: Jay W. Rojewski, JVER Editor , The University of Georgia, Athens, GA
Chair: James Flowers
Facilitator: Cheryl Evanciew

3:30 - 5:00 p.m.--Convention Center, Room N236
Motivation and Program Development

Topic 1: Attitudes and Motivations of Vocational Educators Regarding Program Improvements
Speakers: James P. Greenan, Ramlee B. Mustapha, Lisa Ncube, Purdue University, West Lafayette, IN
Topic 2: Do Gender and Academic Risk Matter? Influences on Career Decision Making and Occupational Choice in Early Adolescence
Speakers: Jay W. Rojewski and Roger B. Hill, The University of Georgia, Athens, GA
Chair: Jimmy Cheek
Facilitator: To be Announced

✱ Friday, December 12 ✱

10:30 a.m. - 12:00 noon--Convention Center, Room N221, N222
Critical Issues in Vocational Education: Open Forum of AVERA Past Presidents

Speakers: Past Presidents of the American Vocational Education Research Association (AVERA)
Chair: Michael K. Swan, AVERA Past-President, Washington State University, Pullman, WA
Facilitators: Donna H. Redmann, AVERA President, Louisiana State University, Baton Rouge, LA
Wanda L. Stitt-Gohdes, AVERA President-Elect, The University of Georgia, Athens, GA

12:00 noon - 1:30 p.m.--Convention Center, Room N219
Past President Luncheon (By Invitation only)

Chair: Michael K. Swan, AVERA Past-President, Washington State University, Pullman, WA
Facilitators: Donna H. Redmann, AVERA President, Louisiana State University, Baton Rouge, LA
Wanda L. Stitt-Gohdes, AVERA President-Elect, The University of Georgia, Athens, GA

1:30 - 5:00 p.m.
Grand Carousel

Carousel 1: Evaluating and Improving Tech Prep: The Minnesota Self-Assessment Model

Speakers: David J. Pucel and James Brown, University of Minnesota, St. Paul, MN
Carousel 2: Teacher Characteristics and Activities That Contribute to Students' Transition
Speakers: B. June Schmidt and Curtis Finch, Virginia Tech Site, NCRVE, Blacksburg, VA
Carousel 3: Improving Outcomes of Post-Secondary Occupational Students Through a TQM-Based Student Outcomes Assessment Program
Speakers: Gerald E. Svendor and Terry E. Luxford, West Shore Community College, Scottville, MI
Carousel 4: Perceptions on Delivery of Biotechnology Instruction
Speakers: Dan Brown and Mike Kemp, Murray State University, Murray, KY
Carousel 5: Linking the NCTM Standards and Career Curricula: Is Your School Ready?
Speaker: Victor M. Hernandez-Gantes, Center on Education & Work, Madison, WI
Carousel 6: Model Preservice Teacher Education Program for Agricultural Education
Speaker: Kirk A. Swortzel, Purdue University, West Lafayette, IN
Carousel 7: A Qualitative Evaluation of Temple University's Program VITAL
Speaker: Gloria Heberly, Temple University, Philadelphia, PA
Carousel 8: A Longitudinal Study of Classroom Problems and Strategies
Speakers: Betsy Orr, Cecelia Thompson, and Dale Thompson, University of Arkansas, Fayetteville, AR

5:30 - 7:30 p.m.--Convention Center, Room N221, N222
AVERA Presidential Address and Annual Business Meeting

Chair: Michael K. Swan, AVERA Past-President, Washington State University, Pullman, WA
Facilitators: Donna H. Redmann, AVERA President, Louisiana State University, Baton Rouge, LA
Wanda L. Stitt-Gohdes, AVERA President-Elect, The University of Georgia, Athens, GA

✱ Saturday, December 13 ✱

10:30 a.m. - 12:00 noon--Convention Center, Room N103
Factors Influencing Program Development and Student Choice

Topic 1: Factors Perceived to Influence the use of the Program of Activities
Speakers: Robert M. Torres and Thomas J. Dormody, New Mexico State University, Las Cruces, NM
Topic 2: Sources of Influence on Students' Enrollment Decision in Post-Secondary Vocational-Technical Education

Speakers: Brian A. Sandford and Robert M. Torres, New Mexico State University, Las Cruces, NM
Topic 3: Linking the NCTM Standards to Emerging Vocationalism: A Promising Equation?
Speaker: Victor M. Hernandez-Gantes, Center on Education & Work, Madison, WI
Chair: Donald Elson
Facilitator: Roger Porter

1:30 - 3:00 p.m.--Convention Center, Room N113
Doctoral Studies in Vocational Education, Session I

Topic 1: An Investigation of the Attitudes and Curricular Values of Administrators and Faculty in Wisconsin
Speaker: Jerrilyn A. Brewer, Western Wisconsin Technical College, La Crosse, WI
Topic 2: Gatekeepers of Family and Consumer Sciences/Secondary HomeEconomics Programs
Speaker: Susan W. Bolen, Texas Tech University, Lubbock, TX
Topic 3: The Role of Social Awareness in the Employment Success of Young Adults with MR
Speakers: Rhonda S. Black, University of Hawaii at Manoa, Honolulu, HI, and Jay W. Rojewski, The University of Georgia, Athens, GA
Topic 4: Motivational Needs of Students Enrolled in Agricultural Educational Programs in Georgia
Speakers: Jeff Turner, Madison County High School, Danielsville, GA, and Ray Herren, The University of Georgia, Athens, GA
Chair: Edward Mann
Facilitator: Penny Clark

3:30 - 5:00 p.m.--Convention Center, Room N115
Doctoral Studies in Vocational Education, Session II

Topic 1: Employer Perspectives Related to Youth Apprenticeship Program Participation
Speaker: Andrea Margaret Rak, University of Illinois at Urbana-Champaign, Chicago, IL
Topic 2: Impact of Environmental Variables on Community College Dental Assisting Students Who are At-Risk for Persistence
Speaker: Debra S. Daniels, Illinois Central College, East Peoria, IL
Topic 3: Student Perception of the Affective Experiences Encountered in Distance Learning Courses
Speaker: J. D. Thomerson, Valdosta State University, Valdosta, GA
Chair: Paul Scott
Facilitator: Wanda Fox

✱ Sunday, December 14 ✱

7:00 - 8:30 a.m.--Convention Center, Room N236
Preparation for the Workplace

Topic 1:	Teacher Preparation for Workplace Skill Instruction
Speaker:	Marcia A. Anderson, Southern Illinois University, Carbondale, IL
Topic 2:	Lessons Learned from an Analysis of Youth Apprenticeship Programs
Speaker:	Clifton L. Smith, The University of Georgia, Athens, GA
Chair:	Donna Seale
Facilitator:	Howard Gordan

RESEARCH PAPERS PRESENTED

INFORMATION TECHNOLOGY RELATED CAREER DEVELOPMENT NEEDS OF SECONDARY VOCATIONAL TEACHERS

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Abstract

Secondary vocational teachers value information technology; have inadequate information technology knowledge and skill; and perceive that information technology in program and instructional management is of moderate usefulness. Teachers perceptions of the value of information technology was positively related to their perceptions of the usefulness of information technology, information technology skills, and software skills. Teachers perceptions of the usefulness of information technology in program and instructional management is the best predictor of the value they place on information technology. Recommendation: Give high priority to the information technology knowledge and skills of both pre- and in-service teachers.

Introduction

Few changes in vocational education have had the impact that educational technology has had. There has been an exponential explosion in the amount, types and uses of technology available to vocational educators. This technology will assist vocational educators in doing a better of job of meeting the needs of their students, however, it comes with a price. Impact on career preparation of teachers and decisions by teachers is contingent on how they value information technology, its availability, and its uses.

An Office of Technology report maintained that the use of technology cannot be fully effective unless teachers receive adequate training and support (Sormumen & Chalupa, 1994). Due to reduced funds and limited teacher in-service in a time when technology changes rapidly, many experienced teachers have very little or no training in this area. This, in turn, impacts the participation of universities, state departments and others in the professional development of vocational teachers. Teacher training provided by school systems designed to address the needs of vocational teachers is limited. Also, keeping current is especially critical because information technology competencies are necessary for the career development of teachers and for the transfer of learning to students.

The literature review revealed that no recent study had been conducted of the current information technology related career development needs of vocational teachers, even though numerous studies were conducted in the 1980s when the leading edge technology of the time was the microcomputer (e.g., Raven, 1988; Tesolowski & Roth, 1988; Yuen, 1985). Several researchers have documented the need for in-service training. Garton and Chung (1996) reported that in-service training on the use of computers in classroom teaching was ranked 6th out of 50 in-service needs of agriscience teachers. The use of multimedia equipment in teaching ranked 45th. In discussing this finding, Garton and Chung asked, "Is it possible that the low acceptance of the use of videotapes and interactive television was due to teachers being unfamiliar with the technology and its capabilities? This issue of using these education technologies should be further investigated" (p. 57).

When one considers instructional technology, researchers should heed the words of Thomson, Simonson and Hargrave (1991): "Educational media alone do not influence the achievement of students. Researchers who have attempted to demonstrate the superior influence of educational technologies on achievement have been unsuccessful. On the other hand, researchers who have attempted to identify the appropriate techniques of message organization and the correct process of instructional delivery with technology have been more in the mainstream of what is considered appropriate" (p. 1).

McCaslin and Torres (1992) found that three factors accounted for 54% of the variance in vocational teachers attitude toward using microcomputers in in-service training: their educational value, confidence in their use, and apprehension about their use. McCaslin and Torres' finding that teachers were apprehensive about the use of microcomputers is supported by research in the area of computer anxiety of vocational teachers. Fletcher and Deeds (1994) in their study of agriscience teachers' and Kotrlik and Smith (1989) in their study of vocational teachers' found that the teachers' computer anxiety ranged from mild to severe on the aspects of computer anxiety measured by Oetting's Computer Anxiety Scale (COMPASS). Both studies also reported that younger teachers were more likely to have higher levels of computer literacy and that computer anxiety decreased as computer literacy increased.

The review of the literature reveals that studies have been conducted that identified computer competencies (e.g., Echternacht, 1996), however, these studies do not address teachers' perceptions of the value and use of technology in vocational education instruction. With the limited resources available, an examination of the information technology related career development needs of vocational teachers is warranted. The results of this study should be useful in planning the on-going implementation of information technology into vocational education programs and in the planning of pre- and in-service preparation of vocational teachers.

Purpose and Objectives

The purpose of this study was to determine the information technology related career development needs of Louisiana vocational teachers. The objectives were to: (1) Determine the demographic characteristics of Louisiana's vocational teachers (degrees held, age, gender, ethnicity, marital status, years teaching experience, participation in professional associations); (2) Determine the value of information technology as perceived by Louisiana's vocational teachers; (3) Determine the general information technology knowledge and skill possessed by Louisiana vocational teachers; (4) Determine software specific knowledge and skill possessed by Louisiana vocational teachers; (5) Determine Louisiana vocational teachers' perceptions of the potential usefulness of information technology; and (6) Determine if selected variables explain the variance in the value placed on information technology.

Procedures

Population and Sample. The population for this study included 2,423 secondary vocational teachers in Louisiana. A stratified random sample (by the six vocational areas: agriscience, business, family and consumer sciences, health, marketing, and technology) of 1,126 was selected, based on a sampling with replacement model.

Instrumentation. The instrument was researcher developed. The scales and items used in the instrument were selected after a review of the literature and based on the objectives of the study. The face and content validity of the instrument was evaluated by an expert panel of university vocational education faculty members. The instrument was field tested with 40 vocational teachers who had not been selected in the sample for the study. Changes indicated by the validation panel and field test were made. Internal consistency coefficients for the scales in the instrument were as follows (Cronbach's *alpha*): Value of Information Technology in Instruction - .87, General Information Technology Knowledge and Skill - .94, Software Knowledge and Skill - .94, and Usefulness of Information Technology in Program Management - .93.

Data Collection. The teachers' responses were collected using two mailings and a telephone follow-up of a random sample of non-respondents. Each mailing consisted of a questionnaire, cover letter, and stamped addressed return envelope. A response rate of 61% (687 out of 1126) was attained. No significant differences existed by response wave on the key variables.

Analysis of Data

The data were analyzed using descriptive statistics for objectives 1 - 5. Stepwise multiple regression was used to analyze the data for objective 6. The alpha level was set á priori at .05.

Results

Objective 1. Objective one was to describe the demographic characteristics of vocational teachers. Almost half (46.5%) possessed the bachelor's degree while over half had an advanced degree. Over 38% were male, 78.8% were white, 18.9% were black, their average age was 44 years and the average years teaching was 17. Almost 50% taught in rural areas, 25% in urban areas, and 20.2% in suburban areas. Over half (56.1%) had attended the state vocational association convention in the past three years while only 19.5% had attended a regional or national AVA convention in the past three years. Over one-third were connected to the Internet (35.9%). These data are presented in Table 1.

Objective 2. Objective 2 was to identify the value of information technology as perceived by Louisiana's vocational teachers. The respondents rated 33 statements on the following Likert type scale: 1 (strongly disagree) to 5 (strongly agree). The data revealed that vocational teachers placed a high value on information technology by strongly agreeing that teachers should know how to use computers and that teachers and students should have computers available for instruction. The respondents agreed with the 12 positive value of information technology statements (e.g., helps individuals apply knowledge, can improve the quality of a program, adds interest in instruction, can improve teacher effectiveness, is a useful instructional tool). They disagreed with all eight "negative" value statements (e.g., information technology is too expensive to be cost effective, creates problems for the teacher, makes learning too mechanical, will limit student-teacher interaction, has little value in vocational education). This information may be found in Table 2.

Table 1

Demographic Characteristics of Respondents

Demographic variable	Category	n	%	M	SD
Degree held	B.S.	288	46.5		
	M.S.	167	27.0		
	M.S.+30/Ed.S	151	24.4		
	Ph.D./Ed.D.	3	.5		
	Other	6	1.0		
	Missing	4	.6		
Gender	Male	237	38.3		
	Female	377	60.9		
	Missing	5	.8		
Ethnicity	White	488	70.8		
	Black	117	18.9		
	Hispanic	1	.2		
	Other	4	.6		
	Missing	9	1.5		
Participation in Louisiana Vocational Association Conference (# times in last 3 years)	0	260	42.0		
	1	111	17.9		
	2	83	13.4		
	3	153	24.8		
	Missing	12	1.9		
Number of times teacher participated in American Vocational Association Convention (national or regional) last three years	0	487	78.7		
	1	72	11.6		
	2	25	4.0		
	3	19	3.1		
	4	2	.3		
	5	1	.2		
	6	2	.3		
	Missing	11	1.8		
Area where school is located	Rural	308	49.8		
	Urban	155	25.0		
	Suburban	125	20.2		
	Missing	31	5.0		
Age		549		44.1	8.8
Years teaching experience		610		17.4	9.1

Demographic variable	Category	n	%	M	SD
School connected to the Internet	Yes No Missing	222 358 39	35.9 57.9 6.3		

Note. N = 619.

Table 2

Value of Information Technology

	Information technology values	M	SD	N
1.	Teachers should know how to use computers	4.69	.70	608
2.	Teachers should know how to use the Internet	4.39	.84	606
3.	Programs should have the following technology available for use in instruction . . .			
	. . . computers for teachers	4.70	.69	609
	. . . computers for students	4.64	.74	609
	. . . Internet connections for teachers	4.44	.82	609
	. . . multimedia computers for teachers	4.41	.82	608
	. . . multimedia computers for students	4.25	.87	607
	. . . Internet connections for students	4.09	1.01	607
	. . . video conferencing capability for teachers	3.93	.98	606
	. . . satellite downlink capability for teachers	3.93	.96	607
	. . . laser disc players for teachers	3.93	1.00	606
	. . . compressed video capability for teachers	3.74	1.00	607
	. . . laser disc players for students	3.65	1.03	603
4.	Information technology . . .			
	. . . helps individuals apply knowledge	4.47	.70	605
	. . . can improve the quality of programs	4.42	.71	605
	. . . adds interest in instruction	4.41	.71	607
	. . . is a useful instructional tool	4.41	.76	607
	. . . is essential to prepare students for the workplace	4.41	.84	606
	. . . can improve teacher effectiveness	4.37	.75	605
	. . . enhances student learning	4.29	.78	606
	. . . is necessary for the success of students in the workplace	4.26	.88	605

Information technology values	M	SD	N
... is important in instruction	4.23	.76	606
... encourages teacher innovation	4.20	.76	603
... allows teachers flexibility in planning their instruction	4.12	.78	605
... promotes self-directed learning	4.07	.80	603
... is too expensive to be cost effective	2.48	1.10	605
... creates problems for the teacher	2.27	1.06	603
... will limit student-teacher interaction	2.19	1.00	606
... makes learning too mechanical	2.18	.93	605
... will isolate teachers from one another	2.06	.97	604
... has an adverse effect on teachers	2.05	.99	602
... causes more problems than it solves	1.99	.91	605
... has little value in vocational education	1.69	.95	604

Objective 3. Objective 3 was to determine the general information technology knowledge and skill possessed by Louisiana vocational teachers. The respondents rated each statement on the following Likert type scale: 1 (I don't know enough to respond) to 5 (My knowledge/skill in this area qualifies me as an expert). The data reveal that the teachers rated themselves average on the eight areas related to the use of computers in instruction. The respondents rated themselves below average on the newer technologies (Internet/World Wide Web, video conferencing, satellite downlinks, compressed video, multimedia computers, laser disc players.) Detailed information are presented in Table 3.

Objective 4. Objective 4 was to determine Louisiana vocational teachers' software specific knowledge and skill. The respondents rated each statement on the following Likert type scale: 1 (I don't know enough to respond) to 5 (My knowledge/skill in this area qualifies me as an expert). The teachers rated themselves average or below average in all utility software areas, with the lowest ratings typically being in the area of software that has just become commonly used in the past few years (such as World Wide Web browsers, e-mail, file transfer, and presentation software). Information on the use of information technology software is presented in Table 4.

Table 3

General Information Technology Knowledge and Skill

General information technology knowledge and skill		M	SD	N
1.	Know the major components of a computer	3.31	.98	605
2.	Know how to operate a computer	3.23	.89	603
3.	Can integrate computer-based teaching materials into instruction	3.11	1.02	605
4.	Can evaluate software for instruction	3.10	1.09	601
5.	Can locate computer-based teaching materials for use in instruction	3.05	1.00	604
6.	Know how to prepare students to use information technology	2.92	1.05	599
7.	Know how to select information technology that fits program needs (computers, modems, printers, laser disc players, etc.)	2.83	1.06	604
8.	Can evaluate software for program management	2.80	1.05	602
9.	Know how to use . . .			
	. . . Internet e-mail	2.26	1.17	605
	. . . multimedia computers	2.24	1.13	605
	. . . World Wide Web	2.17	1.13	606
	. . . laser disc players	2.08	1.05	606
	. . . video conferencing	1.70	.80	606
	. . . compressed video	1.63	.76	606
	. . . satellite downlinks	1.63	.76	606

Objective 5. Objective 5 was to determine Louisiana vocational teachers' perceptions of the potential usefulness of information technology in program and instructional management. The respondents rated each statement on the following Likert type scale: 1 (not useful) to 5 (highly useful). Vocational teachers perceived that information technology was moderately useful in each of the program and instructional management areas listed (e.g., student vocational organizations, instructional management, program planning/ development/ evaluation, instructional execution, school community relations). (See Table 5).

Table 4

Software Specific Knowledge and Skill

	Software specific knowledge and skill	M	SD	N
1.	Word Processor *(Examples: WordPerfect, Microsoft Word, Microsoft Works, Appleworks, etc.)*	3.31	1.11	613
2.	Windows *(Examples: Macintosh, Windows 3.1, Windows95, Windows NT)*	2.75	1.12	612
3.	Graphics *(Examples: Corel, Paintbrush, MacPaint, Harvard Graphics, Freehand, Print Shop, etc.)*	2.57	1.06	612
4.	Spreadsheet *(Examples: Lotus 1-2-3, Excel, Microsoft Works, Quatro Pro, etc.)*	2.54	1.14	613
5.	Grade Book	2.54	1.23	607
6.	Database *(Examples: Approach, dBase, Access, Microsoft Works, etc.)*	2.37	1.11	611
7.	Instructional Software *(Examples: My Resume, Injured Engine, livestock feed ration formulation, personal or business finance, loan amortization, nutrition, house design, health diagnostics, etc.)*	2.35	1.08	612
8.	Desktop Publishing *(Examples: Pagemaker, Ventura, desktop publishing capabilities of WordPerfect or Microsoft Word)*	2.27	1.13	613
9.	Presentation Software *(Examples: PowerPoint, WordPerfect Presentations, Freelance Graphics, Harvard Graphics, etc.)*	2.07	.98	612
10.	Internet E-mail *(Examples: America On-Line, Netscape, Prodigy, Juno, Compuserve, Eudora, etc.)*	2.04	1.10	613
11.	World Wide Web browser *(Examples: AOL, Netscape, Prodigy, Compuserve, Internet Explorer, Mosaic, etc.)*	2.02	1.09	612
12.	Utilities *(Examples: Norton, PC Tools, virus protection, Windows uninstaller, etc.)*	1.95	1.01	610
13.	Lesson Planning *(Examples: 4MATION, PET, etc.)*	1.79	.92	611
14.	File Transfer to and from Other Computers Using a Modem	1.78	.93	612

Objective 6. Objective 6 sought to determine if selected variables explained the variance in the value placed on information technology by vocational teachers. The variables used in this analysis were: degree held, gender, ethnicity, age, years teaching experience, usefulness of instructional technology, participation in the state vocational convention, and participation in regional and national American Vocational Association conventions. The stepwise regression analysis revealed that none of these variables explained a practically significant proportion of the variance in the value vocational teachers placed on information technology. The model obtained as a result of this analysis was statistically significant (F=6.69, p<.01), however, this model included a single variable (usefulness of instructional technology) that accounted for only 1% of the variance.

Table 5

Usefulness of Information Technology in Program and Instructional Management

	Use of information technology	M	SD	N
1.	Instructional Management *(Grade Reports, Student Records)*	4.32	.90	607
2.	Instructional Evaluation *(Testing, Assessment)*	4.24	.84	604
3.	Student Guidance and Career Development	4.18	.88	608
4.	Instructional Planning *(Lesson/Unit/Curriculum Planning)*	4.16	.91	608
5.	Program Planning, Development and Evaluation *(Examples: youth organization activities, program reports, budget, equipment/maintenance, long-range planning, funding requests, fund raising, instructional material, equipment purchases, etc.)*	4.14	.94	580
6.	Professional Role and Professional Development	4.13	.90	608
7.	Instructional Execution *(Presentation of Instruction)*	4.09	.89	603
8.	Student Vocational Organizations	4.08	.90	606
9.	Coordination of Cooperative Programs	4.04	.95	608
10.	School Community Relations *(Public Relations)*	3.87	.95	607

Conclusions

The following conclusions were drawn from this study: (1) Louisiana's vocational teachers place a very high value on information technology; (2) Louisiana's vocational teachers have inadequate general and software specific knowledge and skill in the area of information technology; (3) Louisiana vocational teachers' perceive that information technology in program and instructional management is of moderate usefulness; (4) Vocational teachers perceptions of the usefulness of information technology in program and instructional management is the best predictor of the value they place on information technology; and (5) Recent programming for pre- and in-service education has not resulted in teachers obtaining adequate knowledge and skill in the area of information technology.

Recommendations and Implications

Recommendations. The following recommendations are based on the conclusions of this study: (1) Pre-service programs should strengthen their emphasis on the information technology knowledge and skills of pre-service vocational teachers; (2) The State Department of Education, college/university teacher education programs, professional associations, and other service providers should place a high priority on increasing the information technology knowledge and skills of pre- and in-service teachers; and (3)

Additional research should be conducted to determine the most efficient and effective use of information technology in Louisiana's vocational programs.

Implications. This study documents the fact that vocational teachers need and want increased knowledge and skills in the area of information technology. If vocational programs are going to prepare students for the workplace, both now and in the future, teachers must have this critical knowledge and skill if they are to be successful in the transfer of appropriate information technology to their students. Certainly, if the United States is to remain competitive on the world marketplace, it must have a well trained workforce that will create and maintain a competitive edge.

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DO GENDER AND ACADEMIC RISK MATTER? INFLUENCES ON CAREER DECISION-MAKING AND OCCUPATIONAL CHOICE IN EARLY ADOLESCENCE

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Abstract

Significant differences in the types of career decision-making problems and occupational aspirations and expectations were found for early adolescents based on gender and academic risk status. Males were more likely to feel discouraged, lack necessary information about careers, perceive external barriers, and lack interest in making choices than female adolescents. Students at substantial academic risk were more likely to feel discouraged and indicate a lack of necessary information about career choices. Adolescents at substantial academic risk reported significantly lower occupational expectations, and had larger discrepancies between occupational aspirations and expectations than their peers.

Introduction

Context of Study

Increasingly, young people are being required to make academic and career-related choices in early adolescence that will affect them for the remainder of their lives. Some adolescents experience relatively little difficulty in identifying and pursuing future career goals, while others experience considerably more difficulty (Holland, Gottfredson, & Baker, 1990; Lapan & Jingeleski, 1992). The study of career aspirations provides one means of examining the problems experienced in career decision making. Osipow and Fitzgerald (1996) observed that although substantial progress has been made in establishing determinants of career choice, much remains to be learned about possible antecedents of aspirations and their role in vocational preparation and attainment.

The development of career aspirations and expectations, as well as aspirations-expectations discrepancy, leading to career choice are generally explained by a combination of background variables, personal psychological factors, and sociological or environmental influences (Gottfredson, 1996). Factors considered in this study included gender, academic risk status, involvement in vocational preparation programs, educational aspirations, and problems in making career decisions (Gottfredson, 1996).

Theoretical Base and Related Literature

Career aspirations represent one's orientation toward or preference for a particular career goal and reflect occupational self-concept (Gottfredson, Holland, & Gottfredson, 1975). The study of career aspirations is important for a number of reasons: Career aspirations (a) are among the most significant determinants of eventual career attainment and often determine social mobility (Haller & Virkler, 199), (b) reflect occupational self-concept (Holland & Gottfredson, 1975), (c) have considerable psychological meaning and possess as much predictive value as most interest inventories (Holland et al., 1990), and (d) are indicators of the types of short-term academic and career-related choices individuals are likely to make. Gender differences in occupational aspirations and vocational development have been consistently highlighted in the literature as one of the most powerful and persistent influences on adolescent occupational behavior (e.g., Fitzgerald, Fassinger, & Betz, 1995). Female adolescents aspire to high prestige occupations, while males aspire to occupations of moderate prestige in greater proportion than females.

Another important variable was academic risk status. Using social cognitive career theory, risk behavior was viewed as a potential influence on the availability of academic and occupational opportunities and expectations that are extended or withdrawn by educators, counselors, parents, and employers. Due to the internalization of dissimilar opportunities and experiences, the self-image of adolescents deemed academically at-risk could also be negatively affected (Lent, Brown, & Hackett, 1994, 1996) .

Career indecision is closely related to career aspirations and expectations and has been studied extensively over the past several decades (Herr & Cramer, 1996). A four-factor structure was chosen to conceptualize career indecision (Shimizu, Vondracek, Schulenberg, & Hostetler, 1988; Vondracek, Hostetler, Schulenberg, & Shimizu, 1990) to identify problems that might be encountered in the career decision making process.

Purpose and Objectives

Given the potential impact of factors such as gender and academic risk status on the early career development of adolescents, the influence of these two variables on problems associated with career decision making was examined, as well as occupational aspirations, expectations, and aspirations-expectations discrepancies. The following questions guided these efforts: Do early adolescents differ in the types of perceived barriers experienced in career decision making based on gender and academic risk status? Do differences exist in the career aspirations, expectations, or consistency in aspirations-expectations of early adolescents based on gender or risk status? It was hypothesized that females and those at substantial academic risk would express more problems with career decision making. Another hypothesis was that minimal risk females would express the highest aspirations and expectations, while substantial risk males would possess the lowest.

Procedures

Sample

Participants were from an urban school located in the upper-central United States. The final sample contained 132 complete sets of data and included 94 females (71.2%) and 38 males (28.8%), the majority of whom were African American (65.9%). Most participants (79.5%) were in the ninth grade. Respondents possessed minimal (n = 48), moderate (n = 53), and substantial (n = 31) degrees of risk for school failure. Less than two-thirds expressed plans to attain a college education (n = 85) or attend community college (n = 20). Nine adolescents planned to go directly to work (6.8%), while others planned to enter the military (n = 3) or had not formulated postschool plans (n = 8).

Instrumentation

Self-report demographic data form. Demographic data was collected using a two-page self-report questionnaire to gather information such as gender, grade level, immediate postschool plans, occupational aspirations and expectations, and a report of academic risk behavior.

Measurement of occupational aspirations and expectations. Two questions were used to gather information about occupational aspirations and expectations. These questions have been used in past studies and ask for idealized and realistic assessments of the occupations that respondents think they will hold as adults (Apostal & Bilden, 1991; McNulty & Borgen, 1988). Acceptable test-retest reliability has been reported for these questions; .77 and .81, respectively (McNair & Brown, 1983).

Aspirations and expectations were coded using 4-digit socioeconomic index (SEI) codes (Stevens & Cho, 1985) based on the income and educational attributes found for jobs in the total labor force and represent prestige scores. SEI codes range from 13.98 to 90.45 (M = 34.48) and can be grouped according to high prestige occupations (require a college degree and are professional), moderate prestige occupations (usually require a high school diploma or some college education) and low prestige categories (require less than a high school diploma for initial entry).

Measure of academic risk behavior. A 7-item risk behavior scale was used to collect data about academic risk behavior. The scale included attitudinal and behavioral correlates of risk which were adapted from the High School and Beyond database (Bryk & Thum, 1989), including being disciplined by a teacher, suspended from school, cutting classes, in trouble with the law, thoughts of dropping out, disinterested in school, and a dislike of working hard to succeed. Low scores indicated minimal problems, higher scores indicated multiple risk behavior. Participants were divided into low risk (minimal behavior), moderate risk, and substantial risk (multiple behavior) groups.

Measure of career indecision and problems with career decision-making. Items 3 through 18 of the CDS (Osipow, 1987; Osipow, Carney, Winer, Yanico, & Koschier, 1976) were used to assess career indecision and perceived career decision making problems (Hartman, Fuqua, & Jenkins, 1986). Scores of four factors derived from the CDS that reflected common decision making problems were examined (Shimizu et al., 1988; Vondracek et al., 1990). The first factor, diffusion, described feelings of discouragement and a lack of necessary information. support, a second factor, reflected uncertainty and a need for additional support. The third factor, approach-approach, represented a conflict where several careers were attractive. A final factor, external barriers, comprised external barriers and a lack of interest in making a career decision.

Procedures

Data were collected as part of a pilot test for a 10-day instructional unit on work ethic and employability skills (Hill, 1995). The two-page, self-report questionnaire used to collect demographic information was administered on the first day of the pilot test. Students completed the CDS on day six as part of a lesson on work initiative. Results of the CDS were used in connection with a group discussion among participants about the need to be proactive in preparing for a career.

Results

Problems with Career Decision Making

The dependent variable was multivariate in nature and included four subscale scores: diffusion (M = 5.07, SD = 2.03), support (M = 6.81, SD = 2.00), approach-approach (M = 6.97, SD = 2.28), and external barriers (M = 6.69, SD = 2.54). A two-way MANOVA was selected to examine the potential main and interactive effects of gender and risk status on problems associated with career decision making. Descriptive discriminant analysis was the preferred post hoc procedure (Huberty & Wisenbaker, 1991). MANOVA results revealed no significant differences when considering the interaction effect of gender and risk status. However, significant differences in career decision making problems were revealed for gender [Wilks' $\lambda(4, 123) = .791$, $F = 8.14$, $p < .0001$] and risk status [Wilks' $\lambda(8, 246) = .866$, $F = 2.30$, $p = .022$]. Gender accounted for almost one-quarter of the variance in decision making problems between male and female adolescents ($\text{eta}^2 = .21$), while risk status accounted for a lesser portion of the variance in decision making problems ($\text{eta}^2 = .07$). Female participants had a lower mean score on each of the four CDS subscales. Lower scores indicate that females perceived fewer decision making problems. Within-group structure coefficients determined that external barriers best defined the underlying structure of the *problems in decision making* construct for male and female adolescents. Males were more likely to feel discouraged, lack necessary information to make career decisions, perceive external barriers, and lack interest in making a career choice. Group separation indices revealed that the external barriers factor was also the most important variable in explaining differences.

A cursory review of descriptive data suggested that adolescents with minimal or moderate risk differed from peers with substantial risk behaviors. Only one linear descriptive function was found statistically significant and retained [Wilks' $\lambda = .870$, $\chi^2(8) = 17.80$, $p = .023$]. Within-group coefficients indicated that diffusion best described the underlying structure of problems for risk behavior. Adolescents with substantial risk behavior were more likely to feel discouraged about making a choice, and indicate a lack of necessary information to make career decisions. External barriers best explained differences between risk groups. Adolescents with moderate or substantial degrees of risk were more likely to perceive that external barriers inhibited their ability to make career decisions and express a lack of interest in making a career choice.

Occupational Aspirations and Expectations

Occupational aspirations. Participants' overall SEI mean for aspirations of 61.07 (*SD* = 22.89) reflected a high level of prestige. Almost half of the sample ($n = 61$, 46.2%) aspired to high-prestige occupations, while 51 adolescents (38.6%) expressed moderate-prestige aspirations. The remaining 20 students (15.2%) reported low-prestige aspirations. A two-way ANOVA was performed to examine the possible interaction and main effects of gender and risk behavior on occupational aspirations. Results indicated no statistically significant differences on the gender-risk status interaction or the main effects of gender and risk status on occupational aspirations.

Occupational expectations. A mean score of 58.53 (*SD* = 22.5) was calculated for occupational expectations. Males and females expressed almost identical patterns of expectations when level of occupational prestige was considered, e.g., high prestige (males = 44.7%, females = 44.7%), moderate prestige (males = 36.8%. females = 37.2%), low prestige (males = 18.4%, females = 18.1%). A two-way ANOVA revealed no significant interaction for gender and risk status on expectations. In addition, no significant differences for gender were found. However, a significant difference was revealed for risk behavior, $F(1, 126) = 4.04$, $p = .02$, eta^2 = .06. Youths with minimal risk had higher occupational expectations than their counterparts with substantial risk behavior.

Agreement between aspirations and expectations. Over half of all participants ($n = 72$) expected to attain their idealized occupation. For those reporting discrepancies between aspirations and expectations, difference scores ranged from .08 to 58.32 with an absolute mean difference of 10.89 (*SD* = 16.0). No significant interaction effect between gender and risk status, $F(2, 126) = 2.10$, *n.s.*, or the main effect of gender, $F(1, 126) = 2.38$, *n.s.* was found for the aspiration-expectation discrepancy. However, a significant difference was found for risk behavior, $F(1, 126) = 5.48$, $p = .005$, eta^2 = .08. Adolescents with substantial risk behavior had larger discrepancies than peers with minimal or moderate risk behavior.

Conclusions and Recommendations

Adolescents experienced differing degrees and types of career decision making problems depending on their gender and degree of academic risk status, respectively. Gender differences accounted for 21% of the variance in problems of career decision making. Males perceived greater problems in all four areas (i.e., diffusion, support, approach-approach, and external barriers). Herr and Cramer (1996) explained that, as a result of sex-role stereotyping, females often make career choices at an earlier age than males (as early as age 15). Although speculative, this reasoning might help explain our findings. External barriers appeared to be the problem that best described career decision making problems and provided the greatest degree of separation between male and female adolescents.

Problems with external barriers offered the greatest separation between the minimal risk group and moderate and substantial risk groups. This poses serious implications for high school academic and career counselors and for the futures of adolescents who would be classified as substantially at risk. Barak and Friedkes (1981) studied the effectiveness of career counseling techniques for different types of decision making problems. They concluded that individuals who lacked structure and support in decision making received the greatest benefit from career intervention. Conversely, individuals who perceived external barriers or personal conflict related to career choice gained the least benefit from career counseling.

The specific types of problems that were significant might reflect adolescents' stage of career development and a lack of career maturity (Herr & Cramer, 1996). Developmental tasks at this age are characterized by a progressive narrowing of career options from fantasizing to final decisions about career choice (Super, 1990). It is probable that at this stage of career exploration, participants felt ill-prepared and overwhelmed at having to make a career choice. Another explanation is that adolescents who are female or experience substantial risk have accurately assessed the potential problems and situations they are likely to face in career attainment. The influence of systemic bias and barriers erected on the basis of gender or risk status have already led to limited educational, and ultimately career, alternatives (Hotchkiss & Borow, 1996). The impact of discrimination, stereotyping, and expectancies might extend beyond already recognized problems and also shape individual perceptions (Lent et al., 1996).

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Factors Perceived to Influence the Use of the Program of Activities

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Abstract

A planning and management tool available to the Vocational Student Organization (VSO) advisor is a "program of activities." This study sought to determine the perceived factors that lead to the development and use of a program of activities. The results revealed that of several possible factors, students were identified as the single most influential factor for developing a POA. In developing POA, subjects identified "other teachers" as their primary source of knowledge and generally tend to include standing committees that represent those identified by the National FFA Organization. It was also found that VSO advisors tend to have a favorable attitude toward the use of a POA.

Introduction

A basic responsibility of the vocational-technical education teacher is to integrate the vocational student organization (VSO) into their educational program to "provide students with opportunities to apply learned skills, develop leadership abilities, and gain recognition" (Smith & Edmunds, 1995, p. 29). In doing so, they agree to serve as a VSO chapter advisor.

According to the Center on Education and Training for Employment (1992, p. 3), for vocational-technical education students to experience the full benefits of vocational student organization activities, they "should not only participate in the activities but should be fully involved in selecting the program and planning the work." The role of VSO chapter advisor includes "supervising the development, publication, and implementation of a yearly plan of activities" (also known as a program of work, program of activities, or POA) and "supervising a yearly evaluation of the vocational student organization program" (Vaughn, Vaughn, & Vaughn, 1993, p. 11). A comprehensive POA provides for yearly planning, implementing, and evaluating of the VSO program by its members (National FFA Organization, 1995a; Technology Student Association, 1989).

Throughout the literature, there appears to be agreement on the definition of a program of activities (POA). For example, it has been defined by the Center on Education and Training for Employment (1992, p. 7) as "a written plan listing the activities a local VSO chapter plans to accomplish during the year." Vocational Industrial Clubs of America (1991, p. 30) stated "the chapter program of work includes all activities in which members want to be involved." Phipps and Osborne (1988, p. 393) defined it as "an annual written plan of goals and activities to be undertaken by the membership." Vaughn, Vaughn, and Vaughn (1993, p. 40) called it "a written plan, developed and published yearly, of all activities that the chapter/club wishes to accomplish during the school year." The National FFA Organization (1995b, p. 48) defined it simply as "a road map to guide your chapter to its goals each year."

A POA provides many benefits to vocational-technical education students and programs. For example, Dormody and Seevers (1994, p. 42) stated "participation in planning, implementing, and evaluating leadership development activities enables FFA members to do the real work of their chapters and prepare for later life." When VSO members participate in planning, implementing, and evaluating the POA, they are participating in program planning: a process they will use often in future organizational work. According to Newcomb, McCracken, and Warmbrod (1993, p. 32) "students are motivated through their involvement in setting goals and planning learning activities." Students also "learn to solve problems, think critically, and learn from their successes and failures" (Dormody & Seevers, p. 47). Furthermore, higher-order thinking skills like synthesis and evaluation (Miller, 1990) are emphasized in planning, implementing, and evaluating the POA.

Smith and Edmunds (1995, p. 1) highlighted "the VSO program of work can be coordinated with classroom and occupational experiences and teaches leadership and the techniques of working with others toward common goals." When members participate in planning, implementing, and evaluating the program of activities, they feel more empowerment and ownership for the activities (Vocational Industrial Clubs of America, 1991).

Other benefits of well-planned POAs for FFA chapters (Kansas State Department of Education, 1977, p. 517) would apply to all VSOs:

1. They include goals that serve as a means of directing chapter activities in a positive manner.
2. They provide school administration and community with a better understanding of the local chapter.
3. They provide opportunity for members to use and develop skills taught in vocational agriculture.
4. They point out the vital part FFA has in a vocational agriculture department.
5. They are necessary for proper chapter recognition on the local, state, and national level.
6. They represent the combined thinking of a majority of the members and involve each member.

With so many apparent benefits to vocational-technical education students and programs for adopting the POA, it would seem likely that a high percentage of VSO chapters would be using one. In their study of FFA members in Arizona, Colorado, and New Mexico, Dormody and Seevers (1994) found that only 23 percent of respondents (n=51) had participated in POA planning and only four respondents indicated that POA planning was one of their top three leadership development activities while in FFA. They recommended that further research be conducted to determine advisor perceptions of the level of POA adoption in FFA chapters and FFA member participation in planning, implementing, and evaluating leadership activities. A review of the literature uncovered no other references to previous vocational-technical education research bearing on these questions. Therefore, the researchers in this study decided to follow-up on the recommendations, but within the broader context of vocational-technical education.

Purpose and Objectives

The purpose of this study was to describe New Mexico vocational student organization (VSO) advisors' educational exposure to, use of, and attitudes toward the program of activities (POA). Specific objectives were:

1) To describe VSO advisors' exposure to a POA through membership in a VSO as a youth, and their single greatest influence in developing a POA

2) To describe whether or not VSO advisors have a POA; their sources of knowledge used for developing a POA; POA committees adopted; method of convening committees; and student involvement in planning, implementing, and evaluating VSO activities through the committee structure

3) To determine VSO advisors' attitudes toward the use of a POA.

Procedures

The population for this descriptive survey study was defined as secondary vocational-technical teachers grades 9-12 in New Mexico who had VSO advising responsibilities during the 1995-96 academic school year (N=296). The frame of teachers was acquired from state supervisors and/or state VSO advisors. Vocational-technical areas represented were: agricultural education, business education, marketing education, family and consumer science, trade and industrial education and technology education. Using Krejcie and Morgan's (1970) table of sample sizes, a sample size of 170 was identified as representative of a population of 296 within a five percent margin of error.

An instrument was developed by the researchers to gather the data. The instrument contained three sections. Section one was designed to gather data from subjects pertaining to their attitude toward the use a POA in their vocational student organization (objective 4) using a 7-point semantic differential scale. The scale was developed using three of Rogers'

(1995) attributes of innovations (relative advantage, complexity, and compatibility) as a conceptual base. It contained 13 bipolar adjective pairs arranged in random fashion. For example, bipolar adjectives related to relative advantage were Important/Unimportant and Desirable/Undesirable. To reduce ambiguity of the term "program of activities," a definition was provided. Section two was designed to gather situational information related to the use of a POA (objectives 2 & 3). And, section three gathered demographic information from subjects (objective 1).

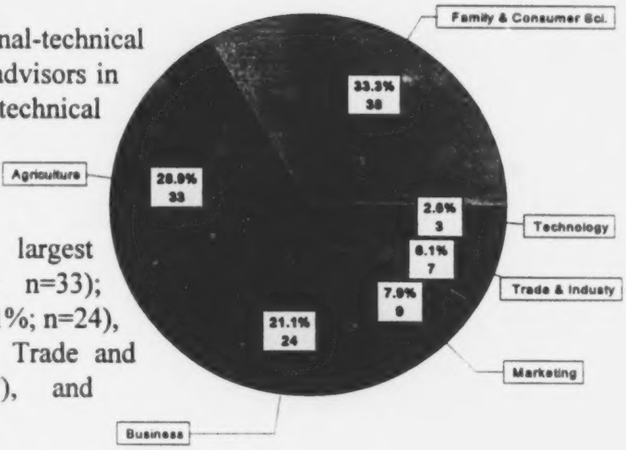
The instrument was submitted to a panel of experts consisting of five persons to determine face and content validity. The panel included three faculty and two graduate students in the Department of Agricultural and Extension Education at New Mexico State University knowledgeable in instrumentation. Suggestions and comments offered by the panel were incorporated into the final version of the instrument.

To determine the reliability of the instrument, a pilot test was conducted. The pilot test group consisted of 15 purposefully selected vocational-technical teachers in New Mexico who attended the 1995 state Vocational-Technical and Adult Education Conference. Because of the nature of the questions, subjects were given two administrations of the same instrument to calculate a test-retest reliability estimate on non-demographic items. An average of 92.5 percent test-retest agreement on non-demographic data was attained with individual items ranging from 80.5 to 100. Using data from the first administration, a Cronbach's alpha was calculated for establishing the reliability on the semantic differential scale. The resultant reliability estimate was a Cronbach's alpha of .79.

Data were collected in Spring 1996. Subjects were sent a package containing a cover letter, questionnaire, and a postage paid, self-addressed envelope. After follow-up efforts, a response rate of 67 percent (n=114) was achieved. To address non-response error, a sample of the non-respondents was compared to the sample of respondents (Miller & Smith, 1983). No significant (p>.05) differences were found to exist between the sample of non-respondents and the sample of respondents on the three variables. Thus, the non-respondent data (n=8) were pooled with the respondent data (n=114) yielding a sample size of 114 (67%) allowing generalizing to the population (Miller & Smith, 1983).

Results

VSO advisors represented six vocational-technical areas (Figure 1). Of the 114 VSO advisors in New Mexico, the largest vocational-technical area was Family and Consumer Science comprising approximately 33 percent (n=38). Agricultural Education comprised the second largest vocational-technical area (26.9%; n=33); followed by Business Education (21.1%; n=24), Marketing Education (7.9%; n=9), Trade and Industrial Education (6.1; n=7), and Technology Education (2.6%; n=3).



The average age of a VSO advisor was 42.4 years (sd=8.66) with approximately 13 years (sd=8.22) of teaching experience (Table 1). The average number of years teachers served as an advisor to a VSO was approximately 11 (sd=8.07). Approximately 57 percent (n=65) of the VSO advisors were female and the remaining 43 percent (n=49) were male (Table 1).

Table 1. VSO Advisors' Characteristics (n=114)

Characteristics	Mean	Std. Dev.	Frequency	Percent
Years of teaching	13.1	8.22		
Years advising VSOs	10.9	8.07		
Age	42.4	8.66		
Gender				
Female			65	57
Male			49	43
Total			114	100

VSO advisors were asked if they had ever been exposed to a POA as a former VSO member (Figure 2). Approximately 31.1 percent (n=38) of the VSO advisors indicated YES. Those remaining responded either NO (32%; n=39) or that they had never been a VSO member (28.7%; n=35). Two VSO advisors chose to not to respond to this item. Of the 114 VSO advisors, approximately 57 percent (n=70) indicated they used a POA in planning activities for their VSO. In

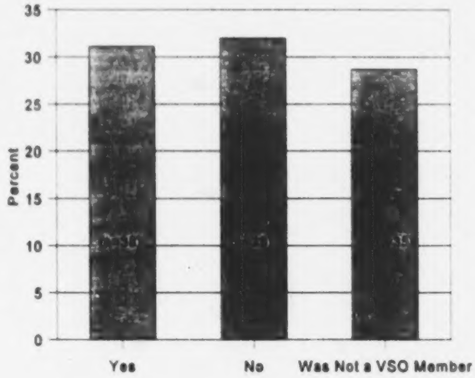


Figure 2. VSO Advisors' Exposure to POA as a VSO Member

identifying VSO advisors' greatest influence for developing a POA, several factors were available for them to select. Advisors were asked to identify only one of the given factors for being the greatest influence on them.

Of the 70 VSO advisors who reported having a POA, the most common mentioned influence for developing a POA was students (18.9%; n=13) (Figure 3). Other influential factors were competitive events (11.4%; n=8), personal interest (11.4%; n=8), state mandate (10.0%; n=7), an existing POA (10.0%; n=7), and peers and/or colleagues (2.9%; n=2). Three VSO advisors (4.3%) identified other factors having the greatest influence on them for developing a POA. Approximately 31 percent (n=22) of the VSO advisors identified more than one factor as having the greatest influence on them in developing a POA.

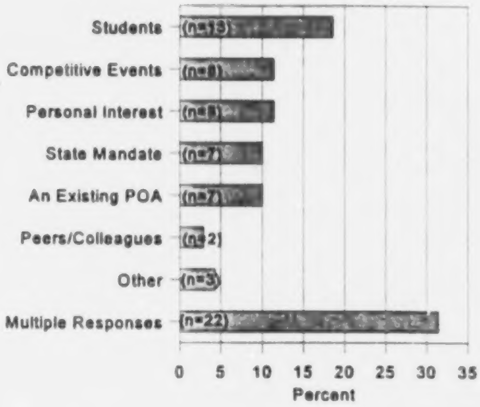


Figure 3. Influential Factors in Developing a POA

Figure 4 highlights the sources of knowledge VSO advisors used in constructing a POA. The most frequently reported source of knowledge for constructing a POA was other vocational teachers (31%; n=35). Aside from the "other" response category, pre-service education (12.4%; n=14) was the source of knowledge that was least identified. Written material (18.6%; n=21), in-service education (17.7%; n=20), and having been a VSO member as a youth (17.7%; n=20) also served as sources of knowledge to VSO advisors. Additionally, thirty percent (n=43) of the respondents indicated they had no knowledge in developing a POA.

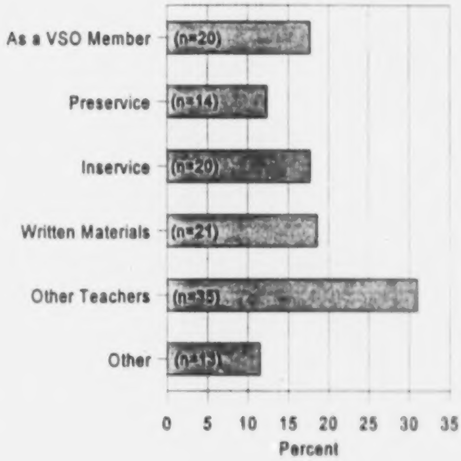


Figure 4. Sources of Knowledge in Developing a POA

Similarly, of the VSO advisors who reported using a POA in their VSO, Community Service (77.1%; n=54) was identified as the standing committee most frequently used (Figure 5). In contrast, the POA standing committee least used was Alumni Relations (35.7%; n=25). Other POA standing committees used were State and National Activities (77.1%; n=49), Earning and Savings (65.7%; n=46), Leadership (64.3%; n=45), Conduct of Meetings (61.4%; n=43), Public Relations (57.1%; n=40), Recreation (52.9%; n=37), Occupational Experience Programs (47.1%; n=33), Banquet (45.7%; n=32), Cooperation (41.4%; n=29), and Scholarship (38.6%; n=27). A few (17.1%; n=12) VSO advisors reported having other standing committees.

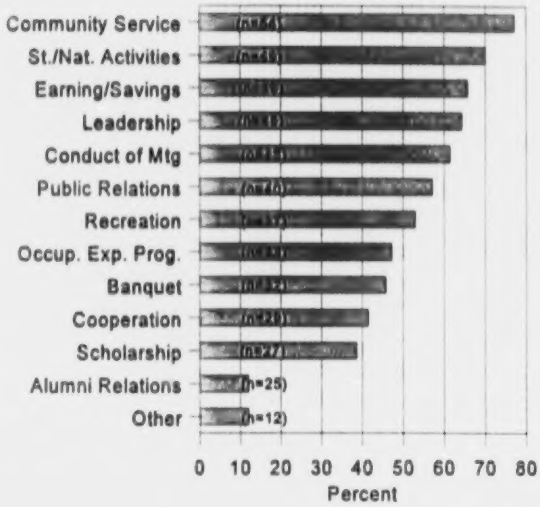


Figure 5. Use of POA Standing Committee

VSO advisors were asked to identify the time(s) in which they convened POA standing committee meetings (Figure 6). Again, of the VSO advisors who used a POA in their VSO (n=70), approximately 54.3 percent (n=38) indicated that they convene meetings during class. Additionally, approximately 47 percent (n=33) indicated they convene meetings during lunch; 31.4 percent (n=22) indicated they met during the chapter meeting; 30 percent (n=21) after school; and 15.7 percent (n=11) reported meeting prior to the chapter meeting. Approximately 14 percent (n=10) indicated they met at some other time.

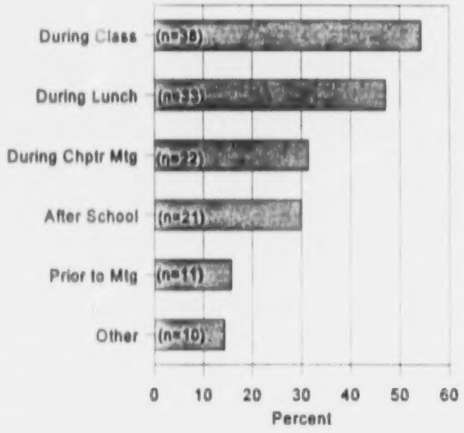


Figure 6. Methods for Convening POA Committees

In determining student participation in developing a POA, VSO advisors were asked to indicate whether or not their students were involved in the planning, implementation, and evaluation of committee activities (Figure 7). Approximately 98 percent (n=69) of the VSO advisors reported that their students were involved in planning with an equal percentage (98.5%) involved in implementing the POA. However, approximately 80 percent of the VSO advisors indicated that their students were involved in the evaluation of activities related to POA committees.

Thirteen paired bipolar expressions were used to assess VSO advisors' attitude toward POA use. POA was defined as a written plan, developed and published yearly, of all activities that the VSO wishes to accomplish during the school year. A POA includes a list of standing committees and their associated goal(s), along with the ways and means for accomplishing those goals (Vaughn, Vaughn, & Vaughn, 1993).

A mean of 4.94 represents the VSO advisors' attitude regarding POA use within a VSO (Table 2). This mean score is based on a seven-point rating scale with seven being most favorable. The standard deviation was .91 with individual mean scores ranging from 2.62 to 6.77.

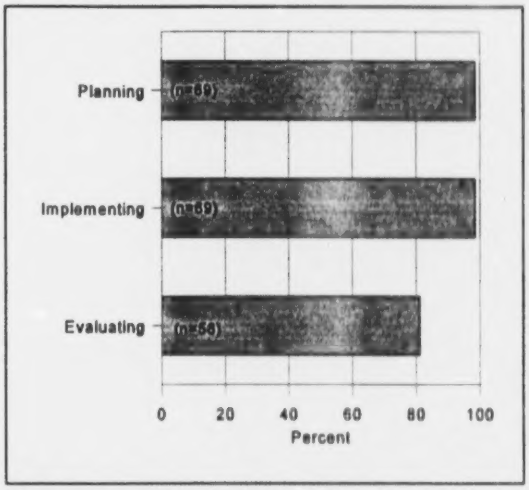


Figure 7. Student Participation in Developing a POA

Table 2 VSO Advisors' Attitude Toward the Use of a POA (n=114)

Construct	Mean	Std Dev.	Range
Attitude	4.94	.91	2.62-6.77

Note. Scale based on: 1=unfavorable to 7=most favorable

Conclusions and Recommendations

Based on the data it was concluded that vocational-technical education teachers in New Mexico can be represented as having approximately 13 years of teaching experience and approximately 11 years of VSO advising experience. The average age was approximately 42 with the majority (57%) of VSO advisors being female. In addition, the majority (60.7%) of all VSO advisors had never been exposed to a POA and approximately 29 percent reported to have never been a former VSO member.

The majority (57%) of the VSO advisors reported having a POA in their chapter. Of the 11 potential single greatest influence factors for developing a POA that were available for VSO advisors to identify, one half of them were solely identified. The six factors (in order of rank) were students, competitive events, personal interests, state mandates, an existing POA, and peers/colleagues. Factors that were not solely identified by VSO advisors were student-teaching experience, pre-service course work, in-service programs, commercial POA packages, and the availability of a word processor. Accordingly then, it is recommended that persons desiring to promote the use of a POA for VSO chapter operations consider marketing to VSO advisors the need of a POA from the students' perspective, communicate the benefits gained from developing a POA through competitive events and personal satisfaction, and provide them with sample model POAs from their state. It is further recommended that pre-service and in-service education on developing a POA be added or enhanced.

It was concluded that other teachers were the greatest source of knowledge for developing a POA. Written materials, experience as a former VSO member, and pre-service and in-service education were also cited as sources of knowledge for develop a POA. Hence, it is recommended that individuals interested in promoting the use of a POA facilitate networking activities for VSO advisors and promote the use of other teachers as a key source of knowledge and experience for developing a POA. Furthermore, efforts should be made to tap into VSO advisors experiences as a former VSO member in communicating the relative advantages of a POA. Pre-service and in-service education should be strengthened to teach pre-service teachers and current VSO advisors the philosophy and guidelines for developing a POA. Written materials for developing a POA should be disseminated during these educational programs and made available through teacher education units and the state department of education.

VSO advisors adopted the standing committees outlined by the National FFA Organization (1984). The most frequently cited committee was community service, whereas the least identified committee was alumni relations. VSO advisors should be encouraged to adopt a committee structure that is compatible with members' interests and needs, chapter and community needs, and the size of the chapter.

The most frequently cited time for convening POA committee meetings was during class followed by meeting during lunch. This conclusion might suggest that convenience in scheduling is important in arranging for committee meetings. Meeting during class and lunch period allow for optimal member participation. Thus, it is recommended that VSO advisors utilize time during class and the lunch period to convene committee meeting in addressing activities related to the chapter POA. If VSO advisors choose to meet during class, it would require them to structure POA committees by class. In doing so, advisors should consider the maturity and experience of members when assigning committees to classes. Should advisors choose to convene committee meetings during the lunch period, committee structuring may allow for more flexibility for committee membership composition. Other recommended times for convening POA committee meetings include during chapter meetings, after school, and prior to chapter meetings.

VSO advisors reported that nearly all (98.5%) of their members participate in planning and implementing VSO activities related to POA committees. Approximately 80 percent, however, are involved in evaluating committee activities. This would suggest that while members are involved in planning and implementing of committee activities, some are not given an opportunity or they are not taking the advantage of the opportunity to evaluate and make judgements of committee activities. It is therefore recommended that pre-service and in-service education, and state department of education communicate the importance of involving members in evaluating POA committee activities as part of pre-service and in-service programs. Through these experiences VSO members can engage in the complete program planning process, capitalize on successes and failures, and utilize higher-order thinking skills for improving the benefits to members, the chapter, and the community gained through a POA. Finally, advisors need to ensure that members understand their role and responsibilities for the POA. Similarly, members need to spend time on the POA throughout the school year. Committee meetings for updating activities should be held regularly to ensure committee success.

Regarding VSO advisors' attitude toward the use of a POA, it was concluded that they have a moderately (mean=4.94) favorable attitude. Based on a 7-point scale, where 7 is favorable, there remains a small margin for growth in VSO advisors' attitudes. Thus, attitudes should be strengthened through in-service and pre-service education. Using these modes of delivery, presenters should attempt to reduce the perceived complexity and increase the relative advantage and compatibility for using a POA to guide VSO activities.

A recommendation for future research is to obtain actual written POAs from VSO advisors and analyze them for comprehensiveness, member participation, and committee structure, among other elements.

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SOURCES OF INFLUENCE ON STUDENTS' ENROLLMENT DECISION IN POST-SECONDARY VOCATIONAL-TECHNICAL EDUCATION

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Abstract

Descriptive survey research methodology was utilized to explore and describe factors, either demographic, influential, or informational, which influenced student enrollment decisions in entry level welding technology program courses (WTP) at the Doña Ana Community College (DABCC). Data indicated friends of respondents were the largest single source of information leading to awareness knowledge, the factor of student interest in learning about welding was very influential to enrollment decisions whereas family pressure and friend(s) also enrolled in the WTP were not influential factors. Data also revealed respondents had a positive attitude toward the DABCC as an institution.

Introduction

Today's students will become tomorrow's work force. Surveying their occupational goals, as well as personal characteristics--economic, social, and educational, are vital (Henderson, 1970). Understanding student characteristics, the sources of influence and information on student decisions to enroll in, and student perceptions towards, post-secondary vocational-technical education, may be the essential keystone to providing increased post-secondary educational opportunities. In a time when it has been identified that three-fourths of high school students in the United States enter the workforce without baccalaureate degrees, and many do not possess the academic and entry-level occupational skills necessary to succeed in the changing workplace, there is a need to increase opportunities for all students to further their education (Public Law 103-239 (108 Stat. 568), 1994). Developing student profiles at the post-secondary level, is one way to better identify factors that contribute to their choices toward accessing or denying vocational-technical education.

Boyer (1987), and Clyde, Townes, and Hill (1984) identified parents, friends, high school counselors, and high school teachers as sources of influence on college and program selection for high school seniors. Findings by Rossetti (1989) identified the student's mother or female guardian and friends as the most important influences on student curriculum choice. Michaud's (1991) research identified that factors such as location, available programs, and cost, affect student choices concerning post-secondary education.

The Doña Ana Branch Community College (DABCC) is located on the main campus of New Mexico State University (NMSU) in Las Cruces, New Mexico. During the time which this research was conducted, the DABCC had an enrollment of 3,788 students for the Fall 1995, and 3,883 students for the Spring 1996, semesters (NMSU registrars office). The DABCC offers twenty-four different career-oriented programs as well as seven alternate areas of study related to community and adult basic education, developmental studies, and small business development. The Welding Technology Program (WTP) is one of the career oriented programs available at the DABCC. Students may obtain a two-year associate of applied science degree and/or a one-year certificate of completion. The WTP is structured to accommodate both full and part-time students through a "day structured" and "evening or night structured" curriculum offerings.

Purpose and Objectives

The purpose of this study was to answer the problem statement, "What sources of influence, sources of information, and student characteristics are important concerning student decisions to enroll in first semester WTP courses of instruction at the DABCC during the 1995-1996 academic year?" The following objectives assisted in guiding the research effort.

1. Describe the demographic characteristics of students enrolled in the first semester WTP courses at the DABCC.
2. Determine sources of information, and the most prevalent source of information, leading to student awareness of the WTP at the DABCC.
3. Determine influential factors, and the single strongest influence, on student decisions to enroll in first semester WTP courses at the DABCC.
4. Describe student attitudes toward the DABCC.

Procedures

The study utilized descriptive survey research (Ary, Jacobs, & Razavieh, 1990) to achieve the ends sought of exploring and describing the reasons students enroll in first semester WTP courses at the DABCC.

The target population for this study were students enrolled in the first semester courses offered by the WTP at the DABCC during the Fall 1995, and the Spring 1996, semesters. The survey accessed the entire population of interest as a census of both tangibles and intangibles. The DABCC official class list for each of the first semester WTP courses was the frame for this study. The actual population was dependent on class enrollment during the Fall 1995, and Spring 1996, semesters. The surveyed population consisted of thirty eight students (N=38) after verifying class lists and student attendance.

A questionnaire was designed and developed by the researcher to gather the desired information fulfilling the objectives of the study. The instrument utilized checklist, anchored five-point Likert type, and open ended questions. The questionnaire inventoried the areas of influence and information which may have influenced student decisions to enroll in the WTP at the DABCC, attitudes of students towards the DABCC, and student demographic information.

Content and face validity were established using a panel of experts (n=6) review of the questionnaire. The review provided by the panel assisted in the effort to provide an instrument which accurately represented the area and domain of interest in this study. Panel comments and input were addressed and incorporated into the final draft of the questionnaire prior to its administration.

A pilot test using test-retest procedures correlating the paired scores to determine the reliability or consistency of the questionnaire was used (Ary, Jacobs, & Razavieh, 1990). Percent agreement (coefficient of stability) between responses of the test and retest were calculated for questions in the survey instrument addressing sources of influence and information. The range of percent agreement for non-summated items was 69-100%.

Measurement of internal consistency, insuring that all items are contributing to the same domain, was established using Cronbach's coefficient alpha for the summated scales (Ary, et al., 1990). After the completed questionnaires were coded and entered into a personal computer for data analysis, a Cronbach alpha reliability coefficient for questions addressing attitudes of respondents towards the DABCC was computed to be .79. Recommendations by Nunnally (1967) and Ary et al., (1990), indicated the .79 reliability coefficient obtained in the test-retest for this research to be acceptable.

There were two sets of two administrations of the questionnaire. The first set occurred in the Fall 1995, semester, and the second set occurred in the Spring 1996, semester. All administrations were performed in the WTP instructional classroom by the researcher. Consent to participate in the research project was verbally requested by the researcher prior to administration of the questionnaire. Participation was entirely voluntary. The researcher remained in the classroom to respond to any questions that would further clarify the content of the questionnaire. All students enrolled in the surveyed courses in the Fall 1995, and Spring 1996, semesters received and responded to a questionnaire. A total of 38 questionnaires were completed.

Data Analysis

Response data were coded, entered into a personal computer and analyzed using SPSS for Windows (Statistical Package for the Social Science, 6.1). The analysis was conducted to summarize the data collected from the target population. Student demographic characteristics, sources of information and the most prevalent source of information, influential factors and the single strongest influence, and student attitudes toward the DABCC, were summarized using descriptive statistics.

Results

Demographic Characteristics of the Students Enrolled in the WTP at the DABCC

Concerning objective 1, describing the demographic characteristics of the students, a total of 94.7% (*n*=36) of the students were male and the remaining 5.3% (*n*=2) of the students were female. There were 78.9% (*n*=30) of the students who did not consider themselves as belonging to a cultural or ethnic minority while 21.1% (*n*=8) of the students considered themselves as belonging to a cultural or ethnic minority. When responding to marital status, 73.3% (*n*=28) of the students indicated they were single and 26.3% (*n*=10) indicated they were married. 36.8% (*n*=14) of the students indicated their employment status to be working full time, 28.9% (*n*=11) were working part-time, and, 34.2% (*n*=13) were not working. The minimum age recorded was 17 years old and the maximum age was 60, yielding a range of 43 years between the oldest and youngest students. The average age of the students was 26.11 years with one unit of standard deviation being 9.92.

The highest level of education completed were grouped according to high school graduates (or high school diploma equivalency), one-year certificate at a technical school or community college, two-year associate's degree, four-year bachelor's degree or, other. A total of 78.9% (*n*=30) of the students had a high school diploma or equivalent, 2.6% (*n*=1) had obtained a certificate at a technical school or community college, 7.9% (*n*=3) of the students had received a 4-year bachelor's degree, and 10.5% (*n*=4) of the students signified other forms of educational achievement.

Sources of Information Leading to Student Awareness of the WTP at the DABCC

Twelve possible or potential sources of information, which may have been accessed by students, leading to awareness knowledge of the WTP at the DABCC, are listed in Table 1. Respondents were instructed to choose all that applied in the questionnaire. The two sources most selected were 'friend' (34.2%, *n*=13), and 'brochure' (28.9%, *n*=11). A total of 18.4%

Table 1.
Sources of Information Obtained by Respondents About the Welding Technology Program*
(*N*=38)

Sources of Information	*f*	%
Friend	13	34.2
Brochure	11	28.9
High School Counselor	7	18.4
Other Relative	6	15.8

DABCC student (either past or present)	4	10.5
Career day or other event	3	7.9
Parent	3	7.9
Newspaper	2	5.3
Co-worker	2	5.3
Letter From DABCC	1	2.6
Radio	0	0.0
Television	0	0.0
Other	11	28.9

*Respondents were asked to choose all that apply

(*n*=7) students indicated 'high school counselor' as the next predominate source followed by 15.8% (*n*=6) students choosing 'other relative'. DABCC student (either past or present), parent, career day or other event, newspaper, co-worker, and letter from DABCC were also chosen by students as sources of information. The most prevalent source of information obtained by students about the WTP at the DABCC were friends. There were 34.2% (*n*=13) students who indicated that friends were the single greatest source of information about the WTP.

Influential Factors on Student Decisions to Enroll in First Semester WTP Courses at the DABCC

Regarding objective three, fifteen possible or potential influences which may have influenced student decisions to enroll in the WTP at the DABCC were provided in the questionnaire (Table 2). Degrees of influence were categorized using an anchored Likert scale with the following categories: 1=not influential, 2=slightly influential, 3=somewhat influential, 4=moderately influential, and 5=very influential. The influence of 'Interest in learning about welding' had a total of 81.6% (*n*=31) of the responses in the *very influential* category. The mean for this influence is 4.82 with a standard deviation of .39. The related influence of 'Challenge of learning a new skill' received 50% (*n*=19) of the responses in the *very*

Table 2.
Influences on Respondents Decision to Enroll (*N*=38)

	Percentage						
	NI	SyI	SwI	MI	VI		
Influences	%	%	%	%	%	Mean	SD
Interest in Learning About Welding	0.0	0.0	0.0	18.4	81.6	4.82	.39
Courses Offered in the WTP	5.4	0.0	21.6	24.3	48.6	4.11	1.10
Challenge of Learning a New Skill	10.5	2.6	13.2	23.7	50.0	4.00	1.31
Better Job Opportunities	10.5	2.6	28.9	15.8	42.1	3.76	1.32

Want to Work in Welding Industry	15.8	10.5	10.5	18.4	44.7	3.66	1.53
Location	21.6	5.4	16.2	21.6	35.1	3.43	1.55
Two-Year Associates Degree	28.9	2.6	15.8	10.5	42.1	3.34	1.71
Time that WTP Courses are Offered	23.7	0.0	28.9	18.4	28.9	3.29	1.50
Hope to Start Own Business	28.9	7.9	13.2	23.7	26.3	3.11	1.61
One Year Certificate Available	32.4	5.4	21.6	8.1	32.4	3.03	1.68
WTP Reputation	28.9	5.3	18.4	28.9	18.4	3.03	1.51
Cost	31.6	2.6	21.1	23.7	21.1	3.00	1.56
WTP Instructors	32.4	2.7	35.1	8.1	21.6	2.84	1.52
Friend(s) also Enrolled in the WTP	65.8	15.8	5.3	5.3	7.9	1.74	1.27
Family Pressure	73.7	15.8	0.0	0.0	10.5	1.58	1.24
Other	0.0	0.0	2.6	0.0	2.6	4.00	1.41

Note: 1 = Not Influential (NI); 2 = Slightly Influential (SyI); 3 = Somewhat Influential (SwI); 4 = Moderately Influential (MI); 5 = Very Influential (VI)

influential category. The corresponding mean and standard deviation for this influence are 4.00 and 1.31 respectively. The 'Courses offered in the WTP' had a mean of 4.11 and standard deviation of 1.10 with 48.6% (n=18) of respondents choosing the *very influential* category.

The influence of 'Better job opportunities' yielded 42.1% (n=16) responses in the *very influential* category with a mean of 3.76 and a standard deviation of 1.32. Conversely, data for the 'Family pressure' and 'Friend(s) also enrolled in the WTP' influences showed a high percentage of responses in the *not influential* category. A total of 73.7% (n=28) of the responses for the influence of 'Family pressure' indicated that this factor was *not influential.* This category has a mean of 1.58 and a standard deviation of 1.24. A total of 65.8% (n=25) responses for the influence of 'Friend(s) also enrolled in the WTP' indicated that this factor was *not influential.* This category has a mean of 1.74 and a standard deviation of 1.27.

Concerning the single strongest influence, respondents were given ten choices of possible or potential sources of influence regarding their decision to enroll in the WTP and were instructed to choose only one source. A total of 71.1% (n=27) students indicated 'Myself' to be the strongest influence to their decision. 'Spouse' and 'parent' both received two responses, and 'employer' and 'friend' received one response each. The 'other' category also received one response and indicated that 'Ag. teacher' was the strongest influence. There were 10.5% (n=4) students who gave multiple responses and were subsequently delineated from other response categories.

Student Attitudes Toward the DABCC

Data concerning objective 4, student attitudes towards the DABCC was collected using ten possible or potential attitudes of students which could have influenced their decision to enroll in the WTP at the DABCC. It was assumed by the researcher that the individual items in this section of the questionnaire contributed to the overall domain of student attitude towards the DABCC, as such, a summated mean and corresponding standard deviation was also calculated (Table 3). Degrees of influence were categorized using an anchored Likert scale with the following categories: 1=do not agree, 2=slightly agree, 3=somewhat agree, 4=moderately agree, and 5=strongly agree. Only those attitudes identified as having notable response characteristics (items having both a majority or greater number of responses and a mean above 4.0) are discussed.

Students were asked if the DABCC does a good job in providing educational opportunities after high school. A total of 78.9% (*n*=30) of the students stated that they *strongly agreed* with this statement. The mean for this attitude is 4.71 with a standard deviation of .61. There were 63.2% (*n*=24) students who indicated that they *strongly agreed* with the statement that the DABCC is less expensive than attending the main NMSU campus. The mean and standard deviation for this item is 4.37 and .97, respectively. In responding to the statement that the DABCC is meant to fill the educational needs of the local community, 55.3% (*n*=21) of the students *strongly agreed*, with a 4.45 mean and .69 standard deviation. Responses towards the helpfulness of DABCC **faculty** showed 55.3% (*n*=21) of the students *strongly agreed* that DABCC **faculty** were helpful. The mean for this item is 4.26 and the standard deviation is .92. Responses towards the helpfulness of DABCC **staff** showed 51.4% (*n*=19) of the students *strongly agreed* that DABCC **staff** were helpful. The mean for this item is 4.24 and the standard deviation is .90. The statement that students are **not** important to the success of the DABCC was recoded into a positive statement for reporting purposes. A total of 83.8% (*n*=31) students *strongly agreed* that students are important to the success of the DABCC. A mean of 4.62 and standard deviation of 1.01 was calculated for this item. The statement that the DABCC is **not** open to anyone who wants to attend was also recoded to make this a positive statement. There were 63.2% (*n*=24) of the students *strongly agreed* that the DABCC is open to anyone who desires to attend. The mean is 4.13 and the standard deviation is 1.30 for this item. Overall, the summated mean for the ten attitudinal items which contribute to the domain of student attitudes toward the DABCC is 4.19 with a standard deviation of .54.

Table 3.
Summated Mean and Standard Deviation of Student Attitudes Toward the DABCC (N=38)

Factor	Mean	SD
Student Attitude Toward the DABCC as an Institution	4.19	.54

Conclusions

The respondents were mostly male (only 2 students were female). This could be attributed to certain stigmas typically associated with activities and employment opportunities related to the career of welding. Less than a quarter of the respondents considered themselves as belonging to a cultural or ethnic minority, and three quarters were single. Average student age was 26 years. This can be compared to the findings of the American Association of

Community Colleges (1995), which reports the average age of a community college student to be 29. The range of 43 years between the oldest and youngest student demonstrates that the DABCC appears to provide desirable educational opportunities to a wide range of clients. The youngest student of 17 years of age was still attending high school through the AVS program of concurrent high school and community college enrollment. Two other respondents were also participating in the AVS program. This demonstrates that the WTP is providing opportunities to AVS program participants and, may also be an important factor in relation to those who are assisting in facilitating the transition of high school students into the DABCC. The oldest student of 60 years of age shows that the WTP at the DABCC serves a wide range of age groups within the community and it could also be assumed that, for this respondent, age was not perceived as a barrier to enrollment. All students had completed high school, or received a high school diploma equivalency. This is understandable since this is a requirement for enrollment at the DABCC, except for AVS participants. Seventy five percent of the group indicated that a high school diploma, or equivalency, was their highest level of educational achievement. Three students had received a 4-year degree with one student having obtained a master's degree. This demonstrates that the WTP is perceived by these students to offer educational opportunities which are still relevant or desired even though they have already been awarded a post-secondary degree.

Friends were the largest single source of information leading to awareness knowledge of the WTP at the DABCC. Brochure was the next most selected source. Based on these findings, recruitment efforts should emphasize accessing social networks at the level in which they are most prevalent, probably at the secondary level, using appealing information presentation such as might be found in a brochure format.

Interest in learning about welding was a *very influential* factor affecting student decisions to enroll in the WTP. Challenge of learning a new skill, courses offered in the WTP, and better job opportunities, were also *somewhat to moderately influential*. Three quarters of the students felt that family pressure and, friends also being enrolled in the WTP, were *not influential* factors. So although friends were indicated to be the greatest source of information, having a friend enrolled in the WTP was not an influential factor. Approximately three quarters of the students chose the item of 'myself' as the strongest influence in their decision to enroll in the WTP. It could be reasoned that this item should be discounted. A logical argument could be made that most individuals will naturally respond to such a question in the same manner based on the rationale that people will naturally consider themselves as the most important decision maker in their life. However, the same reasoning could be used to validate the item. If individuals, for whatever reason, view themselves as the strongest influence in their decision making process, then accessing these individuals with the proper information and influencing their attitudes becomes an important endeavor related to their choice to enroll in the WTP at the DABCC.

The respondents' attitudes towards the DABCC were generally very positive. Eighty percent of the respondents *strongly agreed* that students are important to the success of the DABCC. Slightly less than two-thirds of the students *strongly agreed* to the statement that the DABCC is open to anyone who wants to attend. Additionally, respondents *strongly agreed* that the DABCC does a good job in providing educational opportunities after high school and, the DABCC is less expensive than attending the main campus at NMSU. Over half the students strongly agreed that the DABCC is meant to fulfill the educational needs of the local community, and the DABCC faculty and staff are helpful. The summated mean for the ten attitudinal items listed in the questionnaire regarding student attitudes towards the DABCC was just over 4.0 with a standard deviation of .54. This indicates that the students generally expressed a positive attitude towards the DABCC as an institution with minimal deviation. The related literature revealed that student attitudes towards the post-secondary institution may influence their decision to enroll in vocational-technical endeavors. The data collected addressing student attitudes towards the DABCC indicates that the image of the DABCC may be an encouraging factor, rather than a discouraging one, concerning the influence this factor may have on student decisions.

Recommendations

Those entities involved with the marketing and recruitment efforts at the DABCC may use the information developed in this study to assist them in their program efforts. If gender and ethnic or cultural diversity are important factors for enrollment at the DABCC or in the WTP, additional attention should be devoted to providing the appropriate information to these populations to perhaps increase their representation in the WTP. Since the students were fairly evenly represented according to their employment status, a conclusion can be drawn that continuing education is important, and possible, at the DABCC even for those individuals who are working either part or full time. This finding also reveals that the DABCC serves diverse needs, at least in regards to employment status. As such, efforts to recruit students through their employers or place of employment should be considered. Based on the findings, age of potential students should not be considered a barrier to enrollment. Information dissemination and recruitment efforts should continue to focus on both the traditional and non-traditional student. Given that 75% of the students indicated that a high school diploma or equivalency to be their highest level of educational achievement, information about the DABCC and the WTP should be disseminated during the decision making process prior to, or shortly after, receiving a high school diploma or its equivalency. Since ‘friends’ were identified to the greatest extent as the largest single source of information concerning the WTP at the DABCC, recruitment efforts should emphasize accessing these social networks at the level in which they are most prevalent, probably at the secondary level. Outreach efforts to recruit students into the WTP should provide information which emphasizes the interesting and rewarding aspects of the welding vocation in an effort to appeal to the learning interests or activity preferences of potential students. Influencing the potential student, rather than another source of influence, should be the focus of the DABCC or WTP marketing effort. Information which presents the image of the DABCC should be emphasized in relation to its influence on student decisions. Current information developed for marketing and recruitment efforts should be reviewed and revised to reflect the findings of this study, as well as to determine if alternative informational delivery systems are necessary and appropriate.

The findings and conclusions also indicate further research efforts are possible which relate to the purpose and objectives of this study. The following recommendations should be considered for further investigation. Does the WTP compete effectively with other technical study programs at the DABCC for potential students? Will identifying students' learning interests and activity preferences at the secondary level assist in locating avenues for providing information and influence to the decision making process of these individuals? Can the current outreach and recruitment efforts of the entities at the DABCC or the WTP be correlated to student decisions to enroll in the WTP at the DABCC? What is the relationship of student attitudes towards the DABCC as an institution to student decisions to enroll in vocational-technical post-secondary education at the DABCC?

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Linking the NCTM *Standards* to Emerging Vocationalism: A Promising Equation?

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Abstract

The premises underlying both mathematics reforms and *emerging vocationalism* movements present historical opportunities for developing integrated curriculum guided by the NCTM *Standards*. Both movements aim at providing *all* students with challenging curriculum and learning tuned to the requirements of today's world. The question is, will this education equation work? To answer this question, it is critical to understand the dynamics of integrated efforts informed by the *Standards*. This study attempted to build an understanding of program development and integrated approaches to linking the *Standards* and career curricula. A national survey of programs featuring mathematics/vocational-technical integration helped identify four promising sites which are addressing the NCTM *Standards* vision. A collective case study suggested that it is possible to develop high quality, standards-based mathematics/career curricula. The dynamics of these efforts were characterized by holistic restructuring of curriculum, instruction and assessment along with organizational and management changes. The implications for implementation are not restricted to curriculum changes, they involve considerations for comprehensive school restructuring in management styles, pedagogy, assessment, teacher roles, and understanding of external supports.

LINKING THE NCTM *STANDARDS* TO EMERGING VOCATIONALISM: A PROMISING EQUATION?

Results from the Third International Mathematics and Science Study (TIMSS) confirmed that we are far from achieving the goal of becoming first in the world in mathematics and science by the year 2000 (NCES, 1996). The report also confirmed that American teachers continue to focus on rote memorization of information, paper-and-pencil work, lecture methods, and extensive content coverage with little relevancy to students' contemporary needs (NCES, 1996; Porter, Kirst, Osthoff, Smithson, & Schneider, 1994; Romberg & Carpenter, 1986). TIMSS concluded that we need to renew efforts for improving mathematics curriculum, teaching, and learning. The National Council of Teachers of Mathematics (NCTM) has played an active role in addressing this challenge. Its vision for curriculum and evaluation has provided a comprehensive framework suggesting improvements for K-12 mathematics (NCTM, 1989). The NCTM vision suggests that all students should participate in powerful mathematics learning, develop confidence through relevant problem solving activities, and make practical concept connections within mathematics and across other disciplines.

Parallel reforms have been promoted in the vocational-technical sector. Derived from changing technologies and modus operandi of global markets, new skills involving problem solving, team work, reasoning, and communication were demanded of the workforce (Gray & Herr, 1995). To face this challenge, reform advocates proposed to bridge academic and vocational education, school and work, and secondary-postsecondary levels (Rosenstock, 1991). This movement (i.e., emerging vocationalism) suggested that *all* students should benefit from programs facilitating rigorous preparation for work or further education and deemed integration of academic/vocational education as a key strategy to emphasize both academic and career competencies. For this purpose, practitioners were provided with broad guidelines to implement suggested reforms.

Converging from two different perspectives, both mathematics and vocational-technical reform movements share common grounds: (a) A belief that all students can benefit from challenging learning regardless of academic abilities or career interests, and (b) an understanding that learning has to be more relevant to students in the context of today's world. These converging goals provide great possibilities for productive instructor collaboration. The question is, how is this equation working? While in principle, the prospects for mathematics/vocational-technical integration appear great, there are a number of institutional obstacles limiting the implementation of integration efforts. Two problems seem to be more prominent: Restricted instructor collaboration fostered by traditionally segregated academic/vocational-technical structures and the proliferation of *applied* curricula still reflecting traditional conceptualizations of teaching, learning and assessment (Stasz, Kaganoff, & Eden, 1994).

It is clear that, if we are to advance implementation of integrated mathematics/career curricula, it is necessary to understand the dynamics of promising programs whose work has been guided by the NCTM vision. In this context, the purpose of this research was to: (a) develop an understanding of how mathematics/vocational instructors collaborate and are supported to implement integrated work based on *Standards*, and (b) determine the extent to which collaborative work reflects the *Standards*.

Background

The concept of integration is not new. Dewey (1990) argued early in the century about the benefits of linking education and work to provide students with a "balance between the intellectual and the practical phases of experience" (p. 133). His vision of work was not that of preparing students for specific jobs. Rather, he envisioned an education that would combine the development of practical senses while enhancing intellectual abilities through a process of experiential discovery. That is, to promote problem solving, reasoning, critical-thinking, and communication abilities as students would engage in active school work featuring real-world social and work situations. Eighty years later Dewey is back: The notion of education through work has great possibilities for linking the NCTM vision to emerging vocationalism. However, the lingering question still lies in determining what constitutes high quality integrated mathematics/career curricula. To this end, a frame of reference is necessary to guide design, implementation, and evaluation of collaborative work.

The NCTM vision and ideas derived from emerging vocationalism provide an excellent framework to linking mathematics/career curriculum, instruction, and assessment activities. This converging framework can assist practitioners in clarifying and guiding the development, implementation, and evaluation of authentic, integrated, *Standards*-based learning. Based on this framework, high quality integrated mathematics/vocational education learning calls for grounding mathematical concepts in worthwhile problem scenarios found in a variety of real-world situations with important career concepts (NCTM, 1989; SCANS, 1992). Likewise, authenticity of learning and instruction can be characterized by the extent to which experiences reflect engagement in: (a) higher-order thinking, (b) in depth understandings of concepts, (c) productive interactions in and outside the classroom, and (d) realistic interdisciplinary connections. Further, this framework suggests that assessment strategies relevant to authentic learning should be considered integral to instructional activities and used to monitor students' progress, make instructional decisions, and evaluate achievement and programs (NCTM, 1989; Newmann & Wehlage, 1995).

However, producing authentic, integrated, *Standards*-based curriculum is a complex undertaking and implementation efforts can be characterized at best as slowly evolving. The barriers for change are many and deeply rooted in strong beliefs about traditional teaching practices involving paper-and-pencil calculations, administrative reliance on standardized tests, and parental expectations on rote homework (NCTM, 1989; Romberg & Carpenter, 1986). Collectively, these factors create a political framework in which policy decisions shaping the nature and scope of school changes are made. Thus, the decision to implement radical changes in the schools aligned with current reforms is not an easy one (Gray & Herr, 1995; NCTM, 1989; Newmann & Wehlage, 1995). For instance, Porter and associates (1994) reported that the current status of implementation of the *Standards* is far from meeting the ambitious goals for mathematics instruction now being developed by the profession. Similarly, the current status of efforts to integrate academic and vocational education is primarily that of applied academic courses, involving very simplistic integration arrangements and basic mathematics rather still following traditional teaching practices for the most part (Gray &

Herr, 1995; Stasz et al., 1994). The NCTM vision and the framework for authentic, integrated instruction can guide instructors in developing problem situations to potentially feature worthwhile mathematical problems in realistic contexts.

Method

To characterize multiple approaches to connecting mathematics and vocational-technical education curriculum, the research design followed a case study format. Case studies allow the examination of educational situations of interest, develop an understanding of specific practices or problems in all its dimensions of complexity, and/or use information for education and training purposes (Stake, 1994). The case study design was guided by three research questions: (a) How did school reforms focusing on integration of academic and vocational education get started?, (b) what is the nature and scope of integration efforts linking mathematics and vocational-technical education?, and (c) to what extent the NCTM Curriculum and Evaluation Standards for improving teaching and learning are emphasized in pedagogical practices? To identify and select promising programs for case study development, two major steps were taken. First, a national survey of secondary and postsecondary sites engaged in linking mathematics and vocational-technical education was conducted to draw a sample of the most promising programs. Based on survey information, four sites were selected including three high schools and a two-year college.

Identification of promising sites

Selected national officers of teacher organizations, directors of mathematics and vocational-technical education, and state education department consultants were contacted in Spring 1995. They were asked to nominate schools and two-year postsecondary institutions which were implementing the NCTM *Standards* and engaged in integration practices linked to occupational contexts. A total of 86 program nominations were received during the search, including 80 high schools and six two-year college programs.[1] To determine the general nature and extent of integration efforts, a survey was conducted during the fall of 1995 asking site representatives (mathematics-vocational teachers, program coordinators) to describe: (a) integration formats, (b) extent to which NCTM *Standards* were being implemented, (c) activities supporting integration, and (d) demographic information describing the institutional profile. Survey instruments were based on work conducted by the National Center for Research in Mathematical Sciences Education and designed to examine how schools were implementing mathematics reforms (Secada & Byrd, 1993). After two follow-up reminders, a total of 41 sites returned surveys (47.6% return rate). This return rate was influenced by the fact that some sites were indeed integrating mathematics and academic education but not emphasizing the *Standards*. In contrast, a number of sites were using the *Standards* in their mathematics program but had no integration efforts. These sites did not return surveys because they did not feel qualified to participate. Thus, the 41 respondents including 37 high schools and four two-year colleges were considered as the pool of programs offering the best framework for selecting promising sites.

Case studies

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[1] This is a proportional rate of participation reflecting the extent of efforts occurring in the educational system at large where the bulk of activity is more prominent at the secondary level (see Stasz et al., 1994).

Case study sites of interest involved four communities with robust experiences in linking mathematics and vocational-technical education: Cocoa High Academy for Aerospace Technology (CHAAT), Fairdale High School Magnet Career Academy (FHS), Mt. Hood Community College (MHCC), and Swansea High School (SHS). The integration efforts of these sites were in the top tier when compared to their counterparts in the survey pool. Collectively, all selected sites favored interdisciplinary collaboration and program-wide commitment to integrate mathematics and vocational-technical education, had spent more time in formal integration work, and showed higher than average commitment to emphasize the NCTM *Standards*. Further, selected sites had their integration efforts connected to school reforms and had met more frequently per semester to discuss integration strategies and student assessment issues. Case study instructors were also more informed about mathematics reform and school-to-work literature than the average instructor surveyed when considering all respondent sites.

Procedures. Protocols for data collection were based on research questions to clarify and characterize practices and processes involving: (a) evolution of integration efforts and commitment to implement school reforms, (b) extent of mathematics integration, and (c) approach taken to emphasize the NCTM *Standards* vision. Probing questions for each area of interest were constructed based on previous research aimed at describing innovative programs featuring school-to-work principles, mathematics reform, and NCTM vision (Hernández-Gantes, Phelps, Jones, & Holub, 1995; NCTM, 1989; Secada & Byrd, 1993). Protocols were used for interviews and focus groups with administrators, mathematics/vocational instructors, and students. A protocol for classroom observations was also developed to document instructor and student activities.

Two-day site visits were conducted by a team of two researchers in Spring 1996. Researchers toured site facilities to become familiar with the physical and social environment of the setting. Prior to each interview or focus group, all participants were informed of the purpose, content, meeting procedures, and intended use of the information. Protocol questionnaires were treated as semi-structured guides susceptible of ad hoc modifications based on the nature of the information and experiences shared by participants.

Analysis. Upon completion of site visits, the research team compared notes guided by one question: What are the major events and characteristics of the site? Personal notes, information from print materials, and transcriptions of interviews and focus groups were summarized to build a profile of each site. The next step involved identification of patterns, key issues, processes, and practices emerging across sites. Because of short duration of site visits, it was not possible to observe a wide range of learning experiences across classrooms and other relevant settings. Thus, to address potential bias embedded in data collection, the analysis relied on triangulation techniques and verification of information from various sources (i.e., interviews, observations, print materials) and consensus building between visiting researchers to decide on relevancy of findings.

Findings and Conclusions

Case study findings confirmed earlier reports on the implementation of mathematics reforms concerning the prospects for using the *Standards* as a framework for improvement of curriculum, instruction, and assessment (Porter et al., 1994). Integrated work did not result in watered down curriculum at case study sites. In fact, the emphasis on career development and appreciation for the value of mathematics seemed to maintain the enthusiasm for integrated curriculum. Students, in general, reported high levels of approval for integrated mathematics reflecting high authentic instructional practices, indicated positive changes in attitudes toward mathematics, and demonstrated better understanding of where it fits in their career interests. Administrators reported that students' scores were similar, if not better, than those participating in more traditional courses. With variations in approach and degree of authenticity, examples from case study sites indicated that it is possible to link the *Standards* to integration efforts at both the secondary and postsecondary level. However, it was clear that linking *Standards* to emerging vocationalism is not a mere question of change in instructional practices. It requires participatory leadership and serious commitment to program-wide restructuring involving comprehensive changes: placing students' experiences at center stage; moving toward authentic, integrated instruction; providing internal support under more democratic and flexible conditions; and promoting a climate conducive to internal and external collaboration (i.e., developing a sense of community). These findings parallel research on organizational restructuring and support a theory for developing integrated, authentic mathematics curriculum (Newmann and Wehlage, 1995).

Commitment to change

At each site local leaders realized that the academic situation and career preparation of students needed to improve. They also recognized the need to shift from traditional tracking systems to more integrated forms such as career academies and career paths. Champions of change were found across sites, individuals providing the fuel to recruit interdisciplinary participation through various leadership styles described elsewhere (see Moss & Jensrud, 1996; Finch, Reneau, Faulkner, Gregson, Hernandez-Gantes, & Linkous; 1992). After a careful and comprehensive evaluation of processes, practices, and outcomes there was a general attempt to build a democratic vehicle for managing change and building a consensus on priorities (e.g., site-based management, working groups). This approach facilitated early collaboration between academic and vocational instructors and created a climate favorable to change. Big-picture understandings of the philosophical underpinnings of change were promoted along with an action plan and a commitment to breaking traditional educational molds. The result was a shared vision for adopting drastic measures involving curriculum restructuring with a student-centered goal: to ground their learning in flexible career structures while preserving rigorous preparation for college. Shaping the institutional landscape and climate in order to guide efforts for improving student learning with lasting results, was a key condition requiring more democratic leadership styles also suggested by other researchers (Newmann & Wehlage, 1995; Hernández-Gantes et al., 1995; Warren-Little, 1996). As a result, particular approaches to integration derived from individual circumstances, needs, realistic assessment of resources, programmatic considerations, and extent of internal and external support. Based on this assessment, the mathematics curriculum at each site was restructured to align with career clusters or academy formats and provide either a series of applied courses or one-track coursework for all students.

Moving toward integrated learning

Another lesson learned is that a commitment to curriculum restructuring and integration is not enough. Matching instructional changes in pedagogy and collaboration arrangements have to occur to engage students in rigorous experiences linking significant mathematics and career concepts. There are no quick-fix approaches nor one-size-fits-all models for integrating mathematics/vocational-technical education. Several collaboration formats were identified across sites ranging from informal exchanges to multi-disciplinary team work where content and instruction had to be carefully coordinated (for details on integration models and strategies, see for example Bottoms & Sharpe, 1996; Fogarty & Soher, 1991; Grubb, 1995). This climate favored a commitment to linking teaching strategies suggested by the *Standards* to collaborative efforts. The career context provided great opportunities to emphasize problem solving, communication of ideas, reasoning, and making relevant concept connections within mathematics and in interdisciplinary applications. Of these, problem solving, communication of ideas, and knowledge applications appeared to be facilitated across the board because of the concurrent emphasis on SCANS skills involving matching ideas. Across sites, several instances of high authentic instructional activities featuring this emphasis were found in a variety of formats. However, these examples did not appear to be the rule but rather promising practices reflecting various levels of commitment to change. A shared understanding of what constitutes authentic, integrated, *Standards*-based instruction is crucial to match high expectations for achievement and career goals for *all* students. To this end, it is critical to understand that the *Standards* and related literature should be taken as a guide, not as a step-by-step cookbook, to stimulate change toward authentic pedagogy sustaining integration (see pp. 11-14, this report; Newmann & Wehlage, 1995).

Institutional and community supports

Consistent with research on school organizational capacity (Kruse et al., 1994; Newmann & Wehlage, 1995), the institutional climate supporting the demands associated with more dynamic instructor collaboration was essential for linking the *Standards* to integrated curriculum, teaching, and assessment. A shared understanding of purpose provided the grounds for establishing governance and management structures that foster a more democratic climate where administration, instruction, internal/external support were considered all part of a harmonious whole. In this climate, professional development was more likely to be shaped by individual and program-wide needs relevant to communal goals. Unlike counterparts in traditional systems where hierarchical structures and compartmentalized interactions are basically the rule, instructors at case study sites functioned in the kind of professional communities described by research on effective school restructuring and development of career-oriented programs. That is, there were communities that foster reflective dialogue, peer feedback, development of shared expectations for students, collaboration, and understanding of the philosophical foundations of reform efforts (Kruse et al., 1994; Newmann & Wehlage, 1995; Bottoms & Sharpe, 1996; Warren-Little, 1996).

Further, because collaboration may involve business and industry partners, mathematics and other academic instructors can gain valuable exposure to these external supports more familiar to vocational-technical peers. Also, collaboration facilitates an understanding of the different expectations for both academic/vocational-technical instructors, help clear stereotypical perceptions, and create an awareness of external influences affecting common goals (e.g., finances, government regulation, public perceptions). An understanding of the whole picture appears to be an essential component of successful restructuring efforts, integrated mathematics work included (see Newman & Wehlage, 1995; Warren Little, 1996).

Barriers for change

Case study information made possible to build an understanding of the kind of organizational dynamics that are conducive to the development of promising efforts linking the *Standards* to emerging vocationalism. However, the big picture of mathematics integration depicted by survey information was not encouraging since the majority of integration efforts around the nation were characterized by low levels of instructor collaboration, simplistic integration formats, and a rather low emphasis on the *Standards* vision. Not surprisingly, few instructors reported familiarity with key documents informing mathematics/STW reform movements. Further, although case study sites reported an optimistic assessment of their emphasis in linking the *Standards* to emerging vocationalism, an analysis of the individual nature and extent of these efforts revealed a more modest qualification. Overall, designing worthwhile problems involving significant mathematics along with authentic pedagogy facilitating critical thinking appears to be the main challenge to advancing integration. Concurrently, programmatic supports needed to maintain instructor collaboration, related professional development, and appropriate resources represent other important considerations. Thus, it is not surprising that linking mathematics and emerging vocationalism in *Standards*-based integrated curricula is evolving very slowly, if at all, both at the secondary and the postsecondary level.

In conclusion, study findings are both humbling and promising. Given the extent of mathematics integrated efforts, it looks as if only a handful of institutions are committed to serious comprehensive reforms linking mathematics/career curriculum, instruction and assessment. Even organizations with substantial efforts underway appear to be struggling in moving toward authentic, integrated instruction guided by the *Standards*. Tying the mathematics and career curriculum with the *Standards* vision is a very complex task requiring deep changes bridging disciplinary walls and well entrenched notions on instruction and assessment. The scope and nature of current efforts reflect this complexity. What seems promising is the realization that it is possible to make authentic mathematics/career curriculum connections. Ground breaking experiences and related research can provide a useful frame of reference for advancing current efforts. For instance, the theory for development of mathematics integrated efforts deriving from case study findings is supported by research on organizational change suggesting that effective restructuring should involve a comprehensive focus on student-centered learning, authentic pedagogy, school organizational capacity, and external support (Bottoms & Sharpe, 1996; Grubb, 1996; Newmann & Wehlage, 1995; Warren-Little, 1996). We further suggest that this process can be guided by benchmarking practices holding important potential applications in educational settings. Benchmarking is used for continuous improvement purposes and is a process for learning about the status of practices and programs, establishing relevant comparisons with practices at other organizations, and fostering a climate for improvement characterized by democratic input from participant groups. It is a tool that may prove useful to institutions looking for ways to effectively implement institutional changes (see for example Inger, 1995).

Implications

The implications for practice involve a closer examination of pedagogical practices featuring mathematics in realistic contexts, size of effect on problem solving, reasoning, and communication skills, and career development. Influence of authentic, integrated practices guided by the *Standards* on career development and attitude toward mathematics should be also rigorously evaluated. Other questions may involve the impact on students of different backgrounds and achievement levels, characteristics of problems generating high levels of reasoning, and assessing the quality of instructor collaboratives. Policy considerations include a revision of the role of government entities, professional organization, schools, and higher education in supporting and sustaining implementation of reforms in the schools.

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Integrating Academic and Vocational Education: An Investigation of the Attitudes and Curricular Values of Administrators and Faculty in the Wisconsin Technical College System

A Research Study Conducted in April, 1995

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Abstract

This study investigated the integration of academic and vocational education in two-year technical colleges by examining the attitudes and curricular values of administrators and faculty in the Wisconsin Technical College System. A survey sampled 525 people: 126 administrators, 152 general education faculty, 225 occupational faculty. Return rate was 71 percent.

Eight research questions were developed around the following sub-themes: capabilities of technical college graduates; technical college faculty preparation; meaning of academic-vocational integration; importance of general education core outcomes and courses; current integration practices; barriers to integration; indicators of effective integration practices.

Analysis of variance was used to compare mean scores for all eight questions. Post-hoc analysis was used to determine statistically significant differences among the three groups. Multiple regression analysis was used to resolve questions relating to capabilities of graduates and the importance of core outcomes.

Findings from the study indicated that there indeed were differences in the perceptions of the three major groups with respect to the integration of academic and vocational education.

Occupational faculty—industrial division rated the importance of academic skills lowest of all three groups. Administrators rated benefits of integration highest. Faculty rated lack of time for curriculum revision and for collaboration as major barriers to integration. Administrators rated lack of time for collaboration and faculty resistance to change as major barriers to integration.

Conclusions included the following: there may be uncertainty throughout the system about the meaning of integration; administrators may be more willing to move outside the traditional notion of what vocational education means.

Integrating Academic and Vocational Education: An Investigation of the Attitudes and Curricular Values of Administrators and Faculty in the Wisconsin Technical College System

I. Introduction, Significance, and Statement of the Problem

There is a growing sense that significant problems exist in the way our current educational systems are structured, designed, developed, and delivered. Vocational education programs historically have been designed to meet the needs of students who do not plan to attend four-year colleges and have too often become the dumping ground for special needs students and students who are from lower socio-economic backgrounds. College preparatory programs have been designed to meet the needs of students from predominantly middle-class families whose expectation is that a traditional, four-year university will be the next step after high school.

The purpose of the study was to determine the attitudes and curricular values of technical college institutions with respect to the integration of academic and vocational education. It was felt that such data could be used to make both policy and practice recommendations at state and local levels, thereby enhancing leadership potency in the area of curricular reform. The problem in this study was that little was known about the attitudes and curricular values of administrators, general education faculty, and occupational faculty in the Wisconsin Technical College System with respect to the integration of academic and vocational education.

II. Theoretical/Conceptual Base and Related Literature

Current calls to "integrate" academic and vocational curricula reflect the notion that the present system which separates students, teachers, and subjects is ineffective. Advocates of this approach cite evidence which supports an integrated, applied approach to teaching students both vocational and academic subjects as superior to an approach which perpetuates the dualism of the two (Berryman & Bailey, 1992; Copa & Pease, 1992: Gray, 1991; Grubb & Kraskouskas, 1992; Hull, 1993; Lewis, 1994; Plihal, Johnson, Bentley, Morgaine, & Liang, 1992). The reasons for attempting to integrate vocational and academic curricula are substantively founded on historical, cultural, educational, ethical and economic reasons. Educators are attempting to implement curricular integration. However, the historical polarization of academic and vocational curricula impedes and complicates that progress.

Education reform efforts over the past ten years have focused primarily on improving the K-12 system; only recently have similar calls to reform teaching and learning been focused on higher education. Critics point to ever-increasing costs of higher education, concern for relevancy of the curriculum, and issues of access and equity. Higher education can no longer afford to insulate itself from critics who point to mediocrity in both the curriculum and instruction. Integrating academic and vocational curricula at the postsecondary level will be especially challenging. Breaking down the walls which posture academics on one side and vocational studies on the other will require thoughtful leadership and careful planning.

Previous research studies have investigated the effects of academic-vocational integration on students, faculty, and the curriculum and have provided a rich context in which to develop the conceptual framework for this study. School cultures and the lives of both academic and vocational teachers have been investigated and researchers have found that perceived and actual differences do exist between them (e.g. Bodilly, Ramsey, Stasz, & Eden, 1993; Grubb, Davis, Lum, Plihal, & Morgaine, 1991; Beck, 1990, 1991; Little, 1992). Various model of curriculum integration have also been identified in previous studies. Grubb and Kraskouskas (1992) identified eight basic models of postsecondary integration. In a study designed to find out how community college students felt about the general education courses they were required to take, Armistead & Vogler (1987) asked students to indicated the importance of selected general education competencies and courses. Other studies have investigated the benefits and positive outcomes of integration. Plihal, Johnson, Bentley, Morgaine, and Liang (1992) suggest that positive outcomes for teachers include greater intellectual stimulation; greater prestige; improved relations with colleagues; increased job security; and increased opportunities to see students learn. Beck, Copa, and Pease (1991) report that integration helps students see the connection between concepts taught in different subjects. Stasz et al. (1994) also report that integration provides for greater self-esteem for vocational students as well as less separation of vocational and academic students. Potential barriers to integration have been identified in previous studies (Stasz et al., 1994; Johnson, 1991; Grubb & Kraskoukas, 1992). The literature also documents that administrators play a key role in helping to effect the integration of academic and vocational education (Schmidt, Finch, & Faulkner, 1992; Grubb & Kraskouskas, 1992; Johnson, 1992; Roegge, 1992; Stasz et al., 1994).

Thus, the conceptual framework for this study emerged from the literature on integration. Eight research questions were set forth to guide the inquiry as follows:

1. Do administrators, general education faculty, and occupational faculty differ with respect to the capabilities they believe a technical college graduate should possess?
2. Do administrators, general education faculty, and occupational faculty differ in their preferences with respect to the educational and occupational preparation needed by technical college faculty?
3. Do administrators, general education faculty, and occupational faculty differ in their conceptions of the meaning of academic/vocational integration?
4. Do administrators, general education faculty, and occupational faculty differ in their conceptions of the benefits of academic/vocational integration?
5. Do administrators, general education faculty, and occupational faculty differ in their rating of the importance of general education core outcomes and general education courses in occupational programs?

6. What primary patterns of academic and vocational integration would emerge if the different groups of stakeholders in the population under study were asked to identify current local practices?
7. Do administrators, general education faculty, and occupational faculty differ in what they believe to be potential inhibitors to academic and vocational integration?
8. Do administrators, general education faculty, and occupational faculty differ in their view of the relative importance of selected potential outcomes that could be used to measure successful integration practices?

It was believed that by developing a survey section around each of these areas, information could be gathered from the three major stakeholder groups which would reveal similarities and differences with respect to the integration of academic and vocational education. The null hypothesis attending these eight research questions was that there were no differences in the perceptions between administrators, general education faculty, and occupational faculty with respect to the integration of academic and vocational education.

III. Research Methods and Procedures

A cross-sectional survey method was employed so that the collected data could be used not only for purposes of description but also for the determination of relationships between variables at the time of the study. A nine-section survey was developed—eight sections around themes identified in the literature and a ninth seeking demographic data. Separate items were then developed for each section which expanded on the major theme and which were extracted from the literature and from previous studies.

A systematic sampling procedure with a random start was used to select a representative sample from the 1994-95 Personnel Directory for the sixteen colleges in the WTCS. Surveys were distributed via a local contact person at each technical college; final survey return rate was 71%. A telephone follow-up with 10% of non-respondents was conducted after all surveys were returned to determine if any non-respondent bias would have changed the survey results.

Analysis of variance was used to compare mean scores for all eight research questions. Post-hoc analysis was used to determine statistically significant differences among the three major stakeholder groups. Multiple regression analysis was used to gain a more comprehensive sense of the factors determining how subjects in the study rated the capabilities of a graduate as well as how subjects in the study rated the importance of core outcomes.

IV. Findings and Conclusions

Findings from the study indicated that there indeed were differences in the perceptions of the three major groups with respect to the integration of academic and vocational education.

Occupational faculty—industrial division rated the importance of academic skills lowest of all three groups. General education faculty rated the importance of academic skills highest of all three groups. All three groups valued the importance of an academic credential for general education faculty more than they valued its importance for occupational faculty. “Collaboration between general education and occupational faculty” most closely described what all three groups felt integration should mean. Highest ranked benefits of integration were better workforce preparation, increased coherence in the curriculum, and helping students understand general education concepts better. Administrators rated benefits of integration highest of all three groups. Occupational faculty rated benefits of integration lowest. All three groups believed technical college graduates needed strong oral and written communication skills. Large numbers of respondents in all three groups did not know the content of the courses in the general education core curriculum. Requiring general education courses is the most representative form of integration. Joint curriculum projects and team-teaching are the least representative forms of integration. Faculty rated lack of time for curriculum revision and for collaboration as major barriers to integration. Administrators rated lack of time for collaboration and faculty resistance to change as major barriers to integration. Faculty did not view administrators as 100% supportive of integration efforts. Employer feedback that students had improved thinking and problem-solving skills as well as improved occupational skills were measures identified as most important in determining the effectiveness of integration efforts.

It can be concluded from this study that the traditional notion of vocational education is changing. Occupational faculty, though not as supportive of the value of academic skills as general education faculty, did not totally discount the value of general education core outcomes or courses. Findings in this study do indicate, however, that occupational faculty and deans do not understand the importance of the role which general education plays in preparing a technical college graduate for the changing workplace. Because administrators see more benefits in integration than do either occupational or general education faculty, it could be concluded that administrators view integration as a means for which to reconceptualize vocational education.

It can also be concluded from this study that vocational education as it was once delivered in the Wisconsin Technical College System is undergoing a transformation. Faculty who started their teaching careers in a system designed to prepare “workers” for narrow, job-specific occupations are ending their teaching careers in a system which is re-thinking how vocational education should be designed and delivered to prepare people not only for work but also for life. Faculty are not discounting the need to revise their curriculum or to work collaboratively with their colleagues; instead, they are saying they need additional time to do so. One strong conclusion which can be drawn from the findings of this study is that administrators do not have a realistic view of faculty teaching responsibilities and the time needed to develop and revise curriculum as evidenced by administrators citing “faculty resistance to change” as one of the barriers to integration.

V. Implications and Recommendations

The conclusions in this study reflect many of the themes which emerged from the literature on integration: the meaning of integration is unclear; simply requiring students to take general education courses does not guarantee that they will transfer or integrate the academic competencies into their occupational programs; professional development for both faculty and administrators is a critical part of the system's ability to respond to ever-increasing demands for flexibility and innovative programming. Additionally, the conclusions in this study speak to the importance of leadership in the integration movement. It is clear that leadership at all levels will become a critical factor in an organization's ability to move forward an agenda of change.

Based on the findings in this study, recommendations can be made in the areas of policy, practice, and further research. In the area of policy, it seems clear that the Wisconsin Technical College System should develop a policy statement which outlines the importance, role, and purpose of general education within the context of occupational programs. Additionally, the WTCS should develop a policy statement which outlines both the role and purpose of the integration of academic and vocational education. The WTCS should also develop a policy statement which outlines the changing role of faculty in restructured organizations and which address such issues as faculty workload, time for faculty to collaborate on joint curriculum projects, and time for faculty to meet as members of inter-disciplinary teams. In the area of practice, it would seem prudent to suggest that occupational programs in the WTCS should develop a holistic, integrated approach to program development and revision. General education competencies should be identified for every program and should transcend the "academic" courses by integrating identified academic competencies into occupational courses as well. Additionally, results of program evaluations should be used to improve the curriculum, instruction and assessment of programs, not just to satisfy state-reporting requirements. Recommendations for further research include replication of this study in a community college setting to determine if the attitudes and curricular values of academic and occupational faculty in a more liberal-arts orientation differed with respect to the integration of academic and vocational education. The findings from this study could also be expanded by conducting on-site observations and in-depth interviews of both faculty and students in general education and occupational classrooms. Findings from this study validate previous studies and concur with many previous findings; thus, these recommendations could be useful in any system trying to bridge the gap between academic and vocational education.

GATEKEEPERS OF FAMILY AND CONSUMER SCIENCES/ SECONDARY HOME ECONOMICS PROGRAMS

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Abstract

Gatekeepers of secondary Family and Consumer Sciences programs (FCS) were surveyed as to their leadership attributes, attitude toward and knowledge of FCS, political activity, and influence tactics to determine if gatekeepers could be segmented into distinct clusters. The random sample included U.S. legislators, state supervisors, Texas secondary counselors and FCS teachers.

Appropriate statistical analyses were calculated on 444 mail questionnaires. Four distinct clusters were formed. Significance was found for all gatekeeper variables, age, and career experience. Cluster 1: high knowledge, & most positive attitude; cluster 2, low leadership & low political activity; 3 high political activity & least positive attitude; and 4 high leadership & low knowledge.

Introduction

Vocational education has a history of being reactive to change rather than proactive to change. Vocational teachers and educators struggle, with increasing difficulty, to keep their programs before the eyes of the general public and legislators. Images of vocational education and inconclusive program results foster disagreements and debate among educational researchers. Proponents cite examples of secondary programs which successfully place students in jobs, encourage post-secondary study after completion of high school, teach workers who can then balance the needs of home and family, and allow students to have hands-on experience in a career cluster. Opponents argue that programs educate students for low-paying jobs, cause students to enter unprofitable career clusters, and waste taxpayers' time and money. The debate over vocational education, including secondary Family and Consumer Sciences (FCS) programs, continues.

Leaders of vocational education, including FCS professionals, may be found at the local, state, and national levels. Leaders are gatekeepers of information because they can withhold, change, or direct information to another person. A gatekeeper of secondary FCS programs is a person with professional and personal leadership skills, who possesses knowledge and attitudes concerning FCS programs, and is in a position to control messages by withholding, transmitting, shaping, displaying, repeating, and timing information so that others are influenced (Shoemaker, 1991).

The political activity of adults in regard to secondary FCS programs has received little attention in research studies. Leadership attributes are developed through political activity, which, places responsibility on leaders. Limited knowledge about and unfavorable attitudes toward secondary FCS programs could affect funding and continuation for programs. The acquisition of knowledge places the leader in a decision-making position. Leaders use influence tactics (a relatively recent research concept) based on the knowledge of the situation and the tasks needed to achieve a goal. Attitudes of the leader are important in determining how information is utilized.

Purposes of Study

The purposes of the study were to:

1. survey gatekeepers (federal legislators, state supervisors and association officers of family and consumer sciences, school counselors, and secondary family and consumer sciences teachers) as to their leadership attributes, attitude toward and knowledge of secondary family and consumer sciences programs, political activity, influence tactics, and demographics.

2. cluster gatekeepers into distinct groups with differences existing among groups based on measured variables and demographics.

3. compare cluster membership in terms of leadership attributes, attitude toward and knowledge of secondary family and consumer sciences program, influence tactics, age, career experience, education, job experience and gender.

Theory

Systems theory was developed in 1950 (von Bertalanffy) and was later applied to education organization. The educational systems theory is viewed as an organization in an integrated system of interdependent structures wherein each person in a group knows what others are doing; capable of receiving messages; and, sufficiently disciplined to obey. Opened and closed systems exist; whereas open systems interact with their environment, closed systems do not (Owens, 1981).

A current measure of leader effectiveness in education is based on trait theory. Education is a latecomer to the study of leadership with limited research conducted in vocational education. Knowledge and skills which are unique to given roles distinguish administrators from teachers, teachers from counselors, and counselors from administrators. Stodgill's Leadership Behavior Description Questionnaire, a landmark instrument in leadership behavior, assesses behavioral interaction between the leader and follower from the leader's point of view (Moss, Lambrecht, Jensrud, & Finch, 1994).

Fishbein and Ajzen (1974) proposed, "Attitude should be used only when there is strong evidence that the measure employed places an individual on a bipolar affective dimension" (p.13). The single best predictor of behavior is intention assessed through self-reports. Osgood's Semantic Differential is a simple-looking scale; yet it is a sophisticated use of graphic rating scales and yields direction and intensity of beliefs.

Knowledge and attitudes are characteristics most studied in educational research (Holdt, Gates, & Lassa, 1993; Martin & Fanslow, 1980). Increased knowledge expands awareness of situations which makes experience differentiated among individuals (Eisner, 1991). Knowledge is a part of the cognitive domain of learning and functions in conjunction with the affective and psychomotor domains, although the cognitive and affective domains frequently function together (Blair, 1975).

Political activity has been studied from the aspects of participation, leadership, socialization, success, and demographics (Dawson, 1980; Goel, 1980). Political activity is the sum total of activities that are intended to affect the workings of and outcomes in the political system (Goel & Smith, 1980). Political activity should be observed in a variety of institutional settings including work places and administrative agencies (Dawson, 1980). A Political Activity Scale was developed to assess the perceived political activity of respondents (Rosen & Salling, 1971).

The study of how people use power to influence status levels (subordinates, colleagues, superiors) was begun in 1980 by Kipnis, Schmidt, and Wilkinson (1980). These researchers conducted a follow-up study in which all three status levels used assertiveness, sanctions, ingratiation, and rationality. Additional studies were conducted to replicate and refine the assessment of influence (Hinkin & Schreisheim, 1990; Kipnis & Schmidt, 1982; Yukl & Falbe, 1990).

Procedures

Based on the review of literature, five variables were selected to study leadership attributes, attitude toward and knowledge of secondary FCS programs, political activity, and influence tactics. The questionnaire consisted of five parts: the Leadership Attributes Inventory developed by the National Center for Research in Vocational Education (Moss, Lambrecht, Jensrud, & Finch, 1994), Polar Adjective Groupings Relative to Home Economics Image developed by Faltinson and Hurley (1962), knowledge of family and consumer sciences programs developed by the researcher, the Political Activity Scale developed by Rosen and Salling (1971), the Kipnis-Schmidt Profiles of Organizational Influence Survey (1982), and selected demographics.

The Leadership Attributes Inventory (37 items) was 6 years in development. It was designed to assess 37 leadership attributes (characteristics, knowledge, skills, and values) on a 6-point

Likert-type scale that predispose successful performance as a leader in vocational education. Cronbach's reliability coefficient of alpha was .97 with 37 graduate students and .98 (N = 551) for ratings-by-observers. Interrater reliability for vocational administrators (N = 388) was .77 to .91 and vocational teacher leaders (N = 163) .74 to .91 (Moss & Johansen, 1991).

The Polar Adjective Groupings Relative to Home Economics Image (19 items) was adapted to focus on the concept of secondary family and consumer sciences programs. This semantic-differential scale of 20 items, was developed by Faltinson and Hurley (1962) revised, and used in subsequent studies revised (Armstrong, 1982; Desai, 1962; Haugen, 1963; Lucken, 1963; Rettig, 1963; Schwartz, 1963; Stinnett, 1971). The instrument was revised by arbitrarily disseminating the positions of positive and negative responses.

The knowledge of family and consumer sciences programs (20 multiple-choice items) was based on three constructs (federal programs, funding, and populations served) determined from current vocational education documents and conversations with the American Vocational Association Legislative liaison, members and former members of the Home Economics Coalition, doctoral committee members, and FCSE graduate students. The questions were previewed for clarity of directions and content by the research committee and FCSE graduates at Texas Tech University. Suggestions for improvements were given, and knowledge questionnaire items were revised.

The Political Activity Scale (10 items) was originally a Yes-No scale developed by Rosen and Salling (1971) with Kuder-Richardson reliability of .76. The reported mean was 5.78 and the standard deviation was 2.56. The scale was changed to a 5-point Likert-type scale.

Selected influence tactics from Kipnis-Schmidt Profiles of Organization Influence Strategies (POIS) (1982) included subscales on friendliness (6), bargaining (5), reason (4), and assertiveness (6) for a total of 21 items. The overall Kipnis-Schmidt Cronbach's reliability coefficient of alpha was .69 and .72, .75, .71, and .77 for each subscale respectively. Mowday (1978), Schriesheim and Hinkin (1990), Yukl and Falbe (1990), and Yukl and Tracey (1992) have investigated how influences are used in organizations.

The leadership attributes, attitude toward and knowledge of secondary FCS programs, and influence tactics scales were pilot tested during Spring, 1996 with preservice FCS certification majors (n = 28), graduates enrolled in a school counseling program (n = 4), and FCS professionals (n = 54). The political activity scale was pilot tested with 45 political science university juniors and seniors. Cronbach's reliability coefficient of alpha for the pilot test (n = 86) was: Leadership Attributes (.74), Attitude (.76), Knowledge (.71), Political Activity (n = 45, .54), and Influence Tactics (.69 to .80 on subscales). Final revisions were made to the questionnaire. The total number for the Leadership Attributes, Attitudes, Knowledge, Political Activity, and Influence Questionnaire consisted of 114 items. The demographics included age, career experience, education, ethnicity, gender, job experience, and position. Two versions were prepared. One xeroxed copy format was sent to the Texas secondary counselors and Texas secondary home economics teachers. (Note. Nomenclature has been changed to Family and Consumer Sciences for secondary home economics programs. However, in the Home Economics term is used). A scantron questionnaire was prepared through the Texas Tech University Health Sciences Center for mailing to United States legislators, state supervisors, and elected officers of national FCS professional organizations.

The sample for the study was randomly selected from mailing lists secured from: the local office of a federal legislator, a professional directory of family and consumer sciences members, a university database of school counselors, and the teacher mailing list for a state student organization. The number of each sample group was based on the projected population. The number randomly sampled for each group was: federal legislators, 200 of 535; state supervisors and association officers, 200 of 80 + 145; Texas secondary counselors, 200 of 2500; and Texas secondary home economics teachers, 320 of 3000. The total initial mailing to the secondary home economics teachers was increased by 60 percent to insure an adequate return rate since the schedule of the mailing coincided with the last six weeks of the school year. The total survey sample was 920.

The Salant and Dillman (1994) method of conducting a survey was used to increase the effectiveness and the response rate of the participants in the study. An introductory letter, a packet of materials, reminder postcard, a second packet of materials to non-respondents, a second reminder postcard and thank you postcard were mailed. Postage was provided for the return mail questionnaire addressed to a post office box number in the city of the researcher. Texas home economics teachers received only the introductory letter, the first packet, and the reminder card.

Descriptive statistics of central tendency for means and standard deviations were used. Reliability of each scale of the questionnaire was calculated using Cronbach's reliability coefficient of alpha. Additional analysis included, chi-square tests, analysis of variance, Scheffe technique, post hoc comparisons when significance was found and cluster analysis. The independent variables were leadership attributes, attitude toward and knowledge of secondary FCS programs, political activity, and influence tactics. The dependent variable was cluster membership.

Results

The total number of usable questionnaires was 444 based on response completion of the various scales of the questionnaire, some respondents marked dual responses on one item, or failed to answer an item. The means, standard deviations, and maximum values were: of the measured variables on the total sample leadership attributes (5.10/0.44 at 6.0), attitude toward (5.58/0.72 at 7.0) and knowledge of secondary FCSE programs (13.03/3.09 at 20.0) political activity (2.39/0.74 at 5.0), and influence tactics (3.47/0.40 at 5.0).

Hypothesis 1: It was hypothesized that the gatekeepers can be segmented into distinct groups with differences existing among groups. A preliminary cluster analysis was performed on a random stratified sample of subjects to determine the appropriate number of clusters for the entire sample. Four clusters were identified. Based on the best fit for the variables and sample, Ward's method was selected to analyze the total sample. Analysis was performed on the total sample using the k-means (quick cluster) procedure and Ward's method for four clusters (SPSSx, 1997). The membership size of the clusters was: cluster 1, 177; cluster 2, 110; cluster 3, 27; and cluster 4, 130. The clusters differed in leadership attributes, attitude toward and knowledge of secondary FCS/HE programs, political activity, influence tactics, age, career experience, education, ethnicity, gender, job experience, and position. The researcher rejected the null hypothesis since gatekeepers can be segmented into distinct groups according to differences among the groups.

Hypothesis 2: It was hypothesized that cluster membership differed in leadership attributes, attitude toward and knowledge of FCS programs, political activity, influence tactics, age, career experience, education, ethnicity, gender, job experience, and position.

ANOVA and chi-square tests were conducted on leadership attributes, attitude toward knowledge and knowledge of FCS programs, political activity, influence tactics, age, and education. The Scheffe technique was used if the ANOVA results identified an overall difference; post hoc comparisons were calculated if the chi-square tests were significant. The analysis revealed variations in the expected frequency distribution. Cluster analysis was used to profile the members of each of the four clusters according to the selected variables and demographics. Cluster 1 was populated with leaders who were politically active, highly knowledgeable of secondary FCS programs, and relatively positive in attitude toward secondary FCS programs. Cluster 2 included leaders with somewhat less positive attitude toward secondary FCS programs than cluster 1 and also somewhat lower leadership attributes. Cluster 3 contained leaders who were politically active and held relatively poor attitude toward secondary FCS programs. Cluster 4 members expressed the highest leadership attributes, were politically active, had a relatively positive attitude toward secondary FCS programs, and had little knowledge of secondary FCS programs. The results of the influence tactics scale was basically the same across all clusters.

Some demographic variables helped determine cluster membership. Age, and career experience affected cluster membership. Other demographics such as education, job experience, ethnicity, and gender and position had no influence on cluster membership.

Hypothesis 3: Cluster membership will be independent of gatekeeper groups. A highly significant X2 (9, N=444) = 118.6; p < .0005 association was identified by gatekeeper group and by cluster membership. The associations were approximately normally distributed; thus, the cells with the adjusted standardized residual greater than or equal to 2.0 contributed to the dependence in association (Hinkle, Wiersma, & Jurs, 1994).

The cluster membership was different in gatekeeper groups. Cluster 1 was composed of more state supervisors and fewer legislators, counselors, and teachers than would be expected by chance. Cluster 2 had more legislators and counselors and fewer state supervisors than would be expected. Cluster 3 (the smallest cluster) consisted of more legislators and fewer teachers. Cluster 4 had more teachers and fewer state supervisors.

Hypothesis 4: Cluster membership will be influenced by the demographics of; age, career experience, education, ethnicity, gender, job experience, and position.

ANOVAs were calculated on the demographic variables, the Scheffe technique was applied. Differences between cluster membership were found on two demographic variables, age and career experience. Members in clusters 1 and 2 differed in age and career experience. Cluster 1 members were older and had more career experience than cluster 2 members. Cluster 2 members differed from cluster 3 members in career experience, members in cluster 2 were more experienced than those in cluster 3. Cluster 2 members differed from cluster 4 members in age and career experience; cluster 2 members had more career experience and were younger than members in cluster 4.

The profile, or typology, of each cluster is shown in Table 1. The cluster characteristics of gatekeepers consist of the distinguishing variable (leadership attributes, attitude toward and knowledge of secondary FCS programs, and political activity), group composition, and significant demographics (age and career experience).

Table 1: Profile of Gatekeepers

	Cluster			
Variable	1	2	3	4
Gatekeeper Characteristics	Positive Attitude	Low Leadership	High Political Activity	High Leadership
	High Knowledge	Low Political Activity	Less Positive	Low Knowledge
Demographics				
Group Composition by %	Supervisors 69%	Legislators 62% Counselors 42%	Legislators 31%	Counselors 37% Teachers 37%
Age Category & %	40-59; 78%	40-49; 53%	40-59; 74%	40-59; 72%
Career Experience by years & %	16+; 71%	1-10; 1%	1-5, 16%; 16+, 64%	16-20; 33%

Conclusions and Recommendations

- This descriptive study combined leadership attributes, attitude toward and knowledge of FCS programs, political activity, and influence tactics and demographics (age and career experience, education, ethnicity, gender, job experience and position) to profile characteristics of gatekeepers.
- Reliability, content, and validity were established on the questionnaire consisting of the five scales of leadership, attributes, attitude and knowledge toward FCS programs, political activity, and influence tactics.
- Gatekeepers can be segmented into distinct groups based on their leadership attributes, attitude toward and knowledge of secondary FCS programs, political activity, and demographics (age and career experience).

- Further research is recommended to:

  -replicate the study of gatekeepers selected by expanding the groups in the sample to include school administrators of secondary programs.

  -replicate the study of gatekeepers according to leadership attributes, attitude toward and knowledge of secondary Family and Consumer Sciences programs in other states.

  -examine subscales of the instrument on leadership attributes, attitude toward and knowledge of secondary family and consumer sciences program, political activity, influence tactics, and demographics.

  -determine how the response of U. S. legislators can be increased.

In addition, a conceptual model on gatekeepers of FCS programs can be used as a foundation for further research and development.

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THE ROLE OF SOCIAL AWARENESS IN THE EMPLOYMENT SUCCESS OF ADOLESCENTS WITH MILD MENTAL RETARDATION

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Abstract

To determine the role of social awareness in the employment success of young adults with mild mental retardation, a set of reliable and valid social awareness descriptors was developed through a five-stage process. Secondary teachers used descriptors and two measures of employment success to evaluate 125 adolescents with mild mental retardation. Social awareness ratings approximated a normal distribution and were highly interrelated (r >.80). Statistically significant differences in social awareness components were found between students rated higher and lower on work performance; but no significant differences were found based on employment stability.

Introduction

Work plays an important role in determining how people view individuals in our society (Brolin, 1989). Unfortunately, for persons with disabilities, unemployment and underemployment often hinders a satisfying adult work experience and contributes to less positive societal reactions (Berkell & Gaylord-Ross, 1989; Gajar, Goodman, & McAfee, 1993). The research literature is replete with evidence suggesting that many young adults with mild mental retardation experience difficulty in employment and other adult roles due to inappropriate social behavior (Brickey, Browning, & Campbell, 1982; Chadsey-Rusch, 1992; Cheney & Foss, 1984; Greenspan & Shoultz, 1981; La Greca, Stone, & Bell, 1982; Neubert, Tilson, & Ianacone, 1989). Therefore, identifying elements critical to social success is of primary importance in designing and targeting appropriate vocational interventions and school-to-work transition programs for this population.

Greenspan has proposed that social competence is comprised of temperament, character, and social awareness (1979, 1981; Greenspan & Driscoll, 1997). Temperament refers to physiological responses to social stimuli such as impulsivity, emotionality, or frustration tolerance. Character reflects the moral quality of an individual's response to social stimuli such as niceness/nastiness, politeness, and concern for rights/feelings of others. Social awareness is an individual's ability to understand and effectively deal with people, social situations, and the processes involved in regulating social events. While workers without intellectual disabilities often lose jobs for character reasons (Martin, Rusch, Lagomarcino,

& Chadsey-Rusch, 1986); workers with mental retardation more often lose their jobs for reasons involving lack of social awareness (Greenspan & Shoultz, 1981).

In Greenspan's (1979, 1981) model, social awareness is divided into three components: sensitivity, insight, and communication. Sensitivity, a perceptual component, is an ability to recognize *what* is happening in a social event and what others may be experiencing during that event. Insight, an interpretation component, reflects an ability to understand *why* something is happening including an understanding of the motivations and intentions of others, and the importance of social reciprocity. Communication refers to an ability to take appropriate *action* based on an understanding of what is happening in one's surroundings and why it is occurring; this includes referential communication and interpersonal problem-solving. According to Greenspan, a better understanding of the relative contribution of these three components to success in competitive employment would be of obvious benefit in guiding educational practice.

While many researchers have examined the role of social competence in employment success for adults with mental retardation (Butterworth & Strauch, 1994; Greenspan, Shoultz, & Weir, 1981; Salzberg, Lignugaris/Kraft, & McCuller, 1988), the relationship between social competence, particularly social awareness, and employment success for adolescents still in high school has yet to be examined. This may be due, in part, to the relatively recent recognition that actual employment experiences before adolescents with disabilities complete their formal schooling is an important predictor of positive post-school vocational adjustment (Cobb & Hasazi, 1987; Hasazi, Gordon, & Roe, 1985). A second explanation for limited empirical attention on social awareness issues may be that a validated set of social awareness descriptors has not been available to identify individuals' social awareness strengths and weaknesses. Currently, the best way to assess social awareness is through a rather exhaustive battery of projective tests, psychological evaluations, oral interviews, and observations in simulated social situations administered by a trained psychologist. Therefore, the development of a set of descriptors that secondary vocational and special educators could use for student evaluation may promote both empirical study and instruction of social awareness.

Purpose and Objectives

The purpose of this two-phase study was to examine the role of social awareness in the employment success of adolescents adults with mild mental retardation. In Phase 1, a set of social awareness descriptors was developed and validated to measure the three components of social awareness. In Phase 2, teachers used these descriptors to rate students' social awareness levels. Completed ratings were analyzed to determine the influence of social awareness components on two indicators of employment success, employment stability and work performance. Specific objectives were to (a) develop a set of validated social awareness descriptors, (b) describe teachers' ratings of the social awareness, employment stability, and work performance of secondary students with mild mental retardation, and (c) determine if differences existed in the social awareness of adolescents identified by two separate measures of employment success.

Procedures

Item Development

A search of existing databases was completed to determine whether a suitable rating instrument for the construct, social awareness, was available. While several instruments measured some aspect of social competence, they were not appropriate for the present study for one of several reasons: (a) practical knowledge or performance of specific social skills was assessed rather than social awareness (Greenspan & Love, 1997; Greenspan, Switzky, & Granfield, 1996), (b) the target population did not include adolescents and young adults with mild mental retardation, (c) they involved an extensive battery of individually administered tests given by a trained psychologist, or (d) they did not possess instrument validity and reliability. One scale was located, however, that provided a starting point. This scale was the Checklist of Adaptive Living Skills (CALS) used by McGrew, Bruininks, and Johnson (1996) in a study testing Greenspan's model of personal competence. The adapted CALS contained a total of 85 items taken from the original CALS (Morreau & Bruininks, 1989).[1] Limited work was reported on the validity and reliability of the adapted CALS. Therefore, further validation of the 85-item instrument was necessary.

The next step in the scale development process was to categorize each of the 85 adapted CALS items into one of the three social awareness components described by Greenspan (1979, 1981)—social sensitivity, social insight, or social communication. Forty-one of the original 85 items of adapted CALS items were eliminated because they were either not applicable to social awareness or were repetitive; 44 items were retained. Retained items were then analyzed for content validity (i.e., to determine if the scope and range of Greenspan's definitions were covered by the items) and six new items were written to address aspects of the definitions not addressed.

Validity and Reliability of Social Awareness Descriptors

Panel review. A two-round iterative panel review process was undertaken for the resulting 50-item set of descriptors. The first panel consisted of two professionals recognized in the field of test development for persons with mental retardation. Items were revised or deleted based on panel members' suggestions. The revised set of descriptors was then sent to a recognized professional in the field of social competence for persons with mental retardation. Again, revisions were made resulting in a 30-item set of descriptors, 10 items for each of the three social awareness components.

Nominal group technique (NGT). Nineteen graduate students at a large southeastern research university participated in a nominal group technique (NGT) process to evaluate the content and practical validity of the 30 descriptors. This, too, was an iterative process conducted through small group meetings to solicit individual judgments and reactions. According to Moore (1987), NGT may be used as a research validation tool to support data collected through a more quantitative technique. NGT participants were provided written definitions of the overall construct of social awareness and its three components.

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[1] The original CALS is a criterion-referenced, individually administered measure of approximately 800 specific adaptive behaviors related to self-care, personal independence, leisure, work, community, and residential environments.

Participants were asked to place a *1* (for sensitivity), a *2* (for insight), or a *3* (for communication) next to each item to indicate which category they believed best described the item in question. After categorizing all 30 items, participants were told how the items had previously been categorized and were asked to explain any inconsistencies. This feedback was valuable because it identified various ways items could be interpreted. Group discussion allowed participants to express their opinions about ambiguous items, changes in wording, and possible uses for the set of descriptors. Significant revisions were made based on the feedback received from NGT participants. In the final NGT, however, 21 (out of 30) items received 100% agreement, 5 received 86% agreement, 2 items received 71% agreement, and 2 items had less than 70% agreement. Because of the high degree of consensus, we proceeded with the pilot test.

Pilot test with feedback. Pilot test participants were selected for their knowledge of educational assessment, behavior analysis procedures, and considerable teaching experience. Participants were asked to use the set of descriptors to rate the social awareness of one adolescent with a mild disability that they knew well. Participants provided verbal and written feedback about items that were ambiguous or could be interpreted in several ways, and about the practical applications of the descriptors. Overall, comments indicated that the rating process was relatively easy and took no longer than 20 minutes to complete. Based on feedback and a less than 70% agreement during the final NGT round, it was decided that two of the items should be eliminated. These items belonged to the first and third categories, sensitivity and communication, leaving 9 total items in each category. In order to have an equal number of items in each category, an item from the second category, insight, was also eliminated using "alpha to remove" reliability coefficients to identify the item that contributed least to overall scale reliability. Following these revisions, internal consistency reliability using Cronbach's coefficient alpha for the entire scale of 27 items and for the 9 items in each of the three subscales ranged from .65 to .86 which was deemed acceptable to proceed with the second phase of the study (McLoughlin & Lewis, 1994).

To determine the stability of descriptors, test-retest reliability (McLoughlin & Lewis, 1994) was determined by having 8 pilot test participants complete a second rating of their students 2 to 4 weeks after the initial rating. For each of the 8 paired ratings, an overall score and three component correlation coefficients were calculated. The correlation between test-retest scores for the overall social awareness scale was acceptable ($r = .86$). Stability coefficients for each social awareness component were also high (Sensitivity, r=.88; Insight, r=.92; Communication, r=.90). High test-retest correlations (like those obtained, $r > .80$) indicate that the ratings were relatively stable over time (Ary, Jacobs, & Razavieh, 1985). Results were viewed with caution due to the small number of cases used in determining these values.

Sample

To facilitate data collection, a three-tiered sampling process was used. First, county school systems were selected. Then, schools and teachers were selected from within participating county systems, followed by student selection.

County school systems and specific schools. Ten county school systems in northeast Georgia were purposively selected based on their urbancity (i.e., urban, suburban, or rural status), differing levels of annual household income, and student ethnic/racial diversity. Of the 10 systems initially selected for involvement, 2 systems declined to participate and a third did not provide usable data by the cutoff date. Directors of Special Education in the remaining 7 county systems nominated a total of 16 specific schools for participation. All school principals and special education teachers who were then contacted agreed to participate. Before data was collected, a written explanation of the extent of participation, consent forms, and rating forms were distributed, followed by a training session for teachers involved with the study.

Teachers. A total of 38 educators participated in the assessment of adolescents' social awareness and work performance including 25 special education teachers, 8 Related Vocational Instruction (RVI) coordinators, 2 special education department heads, 2 paraprofessionals, and 1 community-based instruction coordinator. An overwhelming majority of the participants (*n*=34; 89%) were female and White (*n*=37; 97%). The age of these participants ranged from 23 to 59 years (*M*=38.06 years, *sd*=8.49). The total number of years in present employment positions ranged from .75 to 19.75 years (*M*=5.80 years, *sd*=5.80). Participants were an experienced group, averaging 13.82 years of experience in the education field and 6.72 years teaching students with mental retardation.

Students. Participating teachers completed the set of social awareness descriptors and employment success ratings for *all* students in their school age 17 or above who received special education services under the category of Mild Intellectual Disabilities (MID). One hundred twenty-five students met these criteria and were included in the study. This number slightly exceeded the total sample size necessary (*n*=100) for the multivariate design of this study using power, effect size, and degree of desired significance (Olejnik, 1984). Of the 125 participating adolescents, 61% were male. Half of the students were African-American, 46% were White, and 4% were Hispanic or Asian. Slightly over one-third of adolescents were 17 years of age (36%), while the remainder were 18 years of age or older. Half of the sample (52%) was engaged in unpaid employment training, 8% worked in supported employment programs, and 40% worked in competitive employment settings.

Analysis and Results

Social Awareness

The 27-item set of descriptors obtained in Phase 1 of this study was used to rate each adolescent's level of social awareness. Nine items for each of the 3 social awareness components (sensitivity, insight, and communication) were rated on a 5-point Likert-type scale (1=never or rarely even if asked; 2=does, but not well, about ¼ of the time, may often need to be asked; 3=does fairly well, about ½ of the time, may occasionally need to be asked; 4=does well, about ¾ of the time, rarely needs to be asked; 5=does very well, always or almost always, without being asked). Possible scores for each component ranged from a low score of 9 (minimal competence) to a high score of 45 (maximum competence). For all three social awareness subscales, measures of central tendency (mean scores and standard deviations) were roughly equal, and the dispersion of scores approximated a normal distribution that was neither positively nor negatively skewed. Ratings (as shown in Table 1) ranged from the highest to the lowest possible, with a majority of ratings around the middle rating anchor—does fairly well, or ½ of the time, may occasionally need to be asked.

Internal consistency of the social awareness descriptors for the student sample data (*n*=125) was determined using Cronbach's coefficient alpha for the entire scale (*r*=.98) and each of the three components (Sensitivity, *r*=.96; Insight, *r*=.94; Communication, *r*=.94). High internal consistency values indicate that items are measuring, to a certain extent, a common entity (Ary et al., 1985). Data from the student sample (*n*=125) also revealed that the three social awareness components were highly correlated (Sensitivity—Insight, *r*=.86; Sensitivity—Communication, *r*=.83; Insight—Communication, *r*=.85). Component interrelatedness indicated that a large proportion of the total variance was shared, and that multivariate tests would be appropriate.

Employment Stability

Employment success was conceptualized as two separate variables—employment stability and work performance. Employment stability was determined by the number of weeks engaged in *paid* employment during the previous year (regardless of part-time or full-time status). Scores ranged from 0 to 48 weeks (based on 4 weeks per month) with scores closer to 0 indicating less stability in employment and scores closer to 48 indicating greater employment stability. Thirty-three students (26%) had not worked in paid employment during the previous year, while 23 students (18%) had worked the full 48 weeks. The mean for employment stability was 21.56 weeks (*sd*=18.12). To facilitate group comparisons, the sample was divided into two groups based on the median number of weeks employed (*Mdn*=20)—adolescents who (a) worked 19 or fewer weeks, or (b) 20 or more weeks during the previous year. While using a median-split technique with continuous data results in the loss of some precision (Tuckman, 1994), our purpose was to determine if differences in social awareness exist in adolescents who are more successful in employment from those less successful. Therefore, a grouping technique was necessary.

Table 1
Description of Social Awareness Ratings

Score Range	Frequency	Percent of Cases	Cumulative Percent
Sensitivity			
9 to 12	4	3.2	3.2
13 to 16	11	8.8	12.0
17 to 20	16	12.8	24.8
21 to 24	17	13.6	38.4
25 to 28	19	15.2	53.6
29 to 32	23	18.4	72.0
33 to 36	21	16.8	88.8
37 to 40	7	5.6	94.2
41 to 45[a]	7	5.6	100.0
Total	125	100.0	100.0
Mean = 27.01, Std dev. = 8.30, Median = 28.00, Range = 36.00 (from 9 to 45)			
Insight			
9 to 12	4	3.2	3.2
13 to 16	9	7.2	10.4
17 to 20	12	9.6	20.0
21 to 24	22	17.6	37.6
25 to 28	24	19.2	56.8
29 to 32	19	15.2	72.0
33 to 36	15	12.0	84.0
37 to 40	9	7.2	91.2
41 to 45[a]	11	8.8	100.0
Total	125	100.0	100.0
Mean = 27.58, Std dev. = 8.47, Median = 27.00, Range = 36.00 (from 9 to 45)			
Communication			
9 to 12	5	4.0	4.0
13 to 16	9	7.2	11.2
17 to 20	13	10.4	21.6
21 to 24	20	16.0	37.6
25 to 28	21	16.8	54.4
29 to 32	15	12.0	66.4
33 to 36	24	19.2	85.6
37 to 40	12	9.6	95.2
41 to 45[a]	6	4.8	100.0
Total	125	100.0	100.0
Mean = 27.50, Std dev. = 8.37, Median = 28.00, Range = 35.00 (from 10 to 45)			

[a] The distribution did not divide evenly. Therefore, this interval is 1 point larger than others.

Work Performance

While most studies have used employment stability alone as an indicator of employment success, this study added a measure of work performance, the Work Performance Evaluation Form (WPEF; White, 1986; White & Rusch, 1983; used with permission of F. R. Rusch). The WPEF is a 26-item rating scale that examines several aspects of worker performance considered critical to vocational survival including levels of work quality, responsibility, relationship to supervisors and co-workers, and ability to manage time. Each item is rated on a 5-point Likert-type scale (1=poor, 2=needs improvement, 3=average, 4=good, 5=exceptional). Possible scores can range from a low of 26 to a high of 130 (scores closer to 130 indicate better overall work performance). Actual scores covered the possible range (*M*=84.74, *sd*=22.36; *Mdn*=85.0). Forty-nine students (40%) received scores in the highest range (91-130) indicating good or exceptional performance on most items. A comparable number of adolescents (*n*=51; 42%) received scores in the middle range (65-90) which indicates average performance on most items. Approximately 18% of students (*n* = 21) received scores in the lowest range (26-64) indicating their performance was poor or in need of improvement. Again, a median split technique was used to separate participants. Adolescents with scores below the median (*Mdn*=85) were placed in the lower work performance category; those with scores at or above the median were placed in the higher performance category.

Comparisons of Employment Success Variables and Social Awareness Components

To prepare for analyzing potential differences in social awareness, two calculations were performed. First, a multivariate test for homogeneity of covariance matrices was conducted to determine if assumptions for conducting analysis of variance (ANOVA) tests were violated. Box's *M* statistic=10.97 [*F* (18,39509)=.58, *n.s.*] indicated that there were no statistically significant differences among group correlation matrices. In other words, scores were sufficiently homogeneous across groups to meet the assumptions for proper use of ANOVA tests. Second, a multivariate analysis of variance (MANOVA) test was performed to determine if there was an interaction between employment stability and work performance. Wilks' lambda statistic yielded a value of λ=.98 [*F*(3,115)=.55, *n.s.*] indicating no statistically significant interaction between the two employment success indicators. Therefore, we proceeded with two separate MANOVA tests to analyze the main effects of employment stability and work performance on social awareness.

Main effects for employment stability. To compare the social awareness of high school students who experienced greater stability in employment and those who experienced less stability, means and standard deviations were calculated for the three social awareness components (see Table 2). Results of the omnibus MANOVA test revealed no statistically significant differences among the three social awareness based on level of employment stability [Wilks'λ=.99, *F*(3,115)=.33, *n.s.*].

Main effects for work performance. Means and standard deviations for the three social awareness components were calculated for participants who rated higher and lower on work performance (see Table 3). Mean ratings on each social awareness subscale were higher for the group rated higher in work performance. Results of the omnibus MANOVA revealed statistically significant differences [Wilks'λ=.87; *F*(3,115)=5.70, p = .001]. The effect size (eta^2) of this difference was .13 and power was .94.

Table 2

Social Awareness Component Means and Standard Deviations by Employment Stability[a]

Dependent Measure		Greater Employment Stability[b] (n = 69)	Lesser Employment Stability[c] (n = 56)
Sensitivity	*M*	26.99	27.04
	SD	(8.46)	(8.18)
Insight	*M*	27.87	27.23
	SD	(9.09)	(7.70)
Communication	*M*	27.55	27.43
	SD	(8.93)	(7.71)

Note. Each subscale score represents the total of 9 items rated on a 5-point Likert-type scale (range from 9 to 45 per subscale). [a] n=125. [b]20 weeks or more in paid employment during the preceding 12-months. [c]19 weeks or less in paid employment during the preceeding 12-months.

Table 3

Discriminant Analysis Summary for Social Awareness Components by Work Performance

		Means and Standard Deviations[a]		Pooled Within-Group Correlation Matrix		
Dependent Measures		Higher Rated Work Performance (n=61)[b]	Lower Rated Work Performance (n=60)[c]	Sensitivity	Insight	Communication
Sensitivity	*M*	29.43	24.92	1.00	.85	.82
	SD	(7.47)	(8.55)			
Insight	*M*	30.23	25.20		1.00	.84
	SD	(7.99)	(8.36)			
Communication	*M*	30.62	24.45			1.00
	SD	(7.64)	(8.14)			

Construct and Group Separation Indices

Subscales	Within-Group Structure Coefficients	Wilks' Lambda-to-Remove Values
Sensitivity	.7082	.8642
Insight	.7751	.8619
Communication	.9857	.9110

Note. Each subscale score represents the total of 9 items rated on a 5-point Likert-type scale (possible range of scores 9 to 45 per subscale). [a]n=121. [b]Participants who received scores at or above 85 on the Work Performance Evaluation Form (WPEF; White & Rusch, 1983). Scores ranged from 26 to 130. [c]Participants who received scores at or below 84 on the WPEF.

A descriptive discriminant analysis (DDA) was chosen as the appropriate post hoc follow-up method to determine where specific differences in social awareness existed, due to the multivariate nature and interrelatedness of the dependent variables (Thompson, 1994). According to Huberty and Wisenbaker (1992), DDA results can explain overall mean differences among groups by describing underlying structure, and determining the relative contribution of variables to overall group separation. Construct and group separation indices indicated that communication (e.g., an ability to clearly communicate with others, solve interpersonal problems, and resolve conflicts) provided the greatest separation between students rated higher and lower on work performance (see Table 3).

Conclusions

Two important points must be mentioned when discussing the results of this study. First, due to school and teacher nomination procedures and the purposive method of sampling, results may not be generalized to other populations. Second, these findings are based on teachers' perceptions rather than direct measures of social and employment competence. With this second caveat in mind, it is appropriate to briefly discuss the value of using the judgments of others in rating social competence and work performance.

Greenspan (1981) stated "social success is relative to the culture and settings in which an individual typically functions. The ultimate outcome criterion for validating content measures of social competence should, therefore, be the judgments of other people in the individual's environment" (pp. 24-25). According to McFall (1982), it is advantageous to ask significant others to evaluate an individual's social competence because the rating will be based on a wide sample of naturally occurring behaviors in various situations and not merely what could be viewed by an observer over limited periods of time. Several authors have agreed that having teachers or others evaluate social and work behavior is appropriate because these professionals are capable of making meaningful judgments based on their exposure to the individual, and because of their special position to make meaningful recommendations about intervention/instruction based on those judgments (Forte, Storey, & Gaylord-Ross, 1989; Kazdin & Matson, 1981; Walker & Calkins, 1986; White, 1986; White & Rusch, 1983).

Social Awareness

The three social awareness components (sensitivity, insight, and communication) were highly interrelated in this study, sharing a large proportion of the total variance. High correlations between social awareness components seem to imply that the three facets of social awareness are not separate and distinct and might be more accurately conceptualized as three overlapping circles reflecting shared variance. While speculative, it appears that models representing the processing of social information as sequential, proceeding through several set steps from encoding to interpretation, from interpretation to response search and evaluation, and finally to enactment (Dodge, Petit, McClaskey, & Brown, 1986; Perry & Perry, 1987), may be oversimplifying this complex and multifaceted issue. Our findings suggest that further research is needed to determine if, in fact, the process of taking in, interpreting, and finally acting on social information is sequential or if these processes are simultaneous and more integrated with information recycling along the way.

Greenspan and Shoultz (1981) stated "there is considerable variability in the social competence of mentally retarded workers, with a large percentage demonstrating both job stability and acceptable (sometimes exceptional) levels of social competence" (p. 34). Our study supports this assertion. For all three social awareness subscales, measures of central tendency were roughly equal, and the dispersion of scores approximated a normal distribution that was neither positively nor negatively skewed. Interestingly, when explaining the study to a participating teachers, another teacher (not a participant) asked, "Doesn't the definition of mental retardation imply that all students in your study will have low social awareness?" Results indicate that the presence of an intellectual disability does not imply low levels of perceived social awareness. Only 20% of the students received scores indicating they did not perform the items well and needed frequent prompting.

Employment Success

Employment stability. No statistically significant differences in social awareness were found based on employment stability. Thus, students who were engaged in paid employment at least 20 weeks during the previous year did not differ substantially in their social awareness ratings from students who participated primarily in unpaid employment training programs. It appears, then, that length of time in employment did not influence teachers' perceptions of students' social awareness. This finding may also indicate that social awareness does not increase by merely being employed. Students who had worked for longer periods of time in community settings were not perceived as having a better understanding of how to be interpersonally effective. This could be attributable to lowered levels of incidental learning and the need for direct instruction in pointing out relevant features of various workplace environments. However, further research is needed to make any definitive conclusions in this area. It also appears that factors other than social awareness account for which students were placed in competitive employment (or find their own jobs) and which students participated primarily in unpaid training situations.

Work performance. Mean ratings on all three social awareness subscales were higher for the group rated higher in work performance. These differences were statistically significant and seem to imply that social awareness variables play a significant role in how participants were rated on their work performance. Students with higher rated social awareness received higher ratings in work performance suggesting that if a student was viewed as exhibiting a higher level of social understanding, their work performance was also more likely to be viewed favorably. It would be interesting for future research to determine whether higher perceived levels of social awareness lead to more favorable perceptions of work performance, or do more satisfactory levels of work performance lead to perceptions of higher social awareness?

The practical significance of this finding also deserves discussion. The effect size of the difference between groups indicated that approximately 13% of the variance in work performance could be attributed to the social awareness components which is quite high considering other factors that could influence the work performance rating (i.e., familiarity with job tasks, physical coordination and health, dependability, working safely, and completing tasks). Even so, a majority of the variance in employment success was not accounted for by social awareness components. This is interesting when considering the number of studies that have reported the loss of employment by adults with mental retardation due to lack of social awareness (e.g., Greenspan & Shoultz, 1981). Additional study is needed to reconcile this apparent discrepancy.

Finally, the greatest distinction between students rated higher and lower on work performance could be based on their awareness of social communication (e.g., an ability to take appropriate action involving clearly communicating with others, solving interpersonal problems, and resolving conflicts). This is consistent with research literature emphasizing the importance of communication, negotiation/conflict resolution in the workplace such as *Workplace Basics* (Carnevale, Gainer, & Meltzer, 1990), the *SCANS Report* (Secretary's Commission on Achieving Necessary Skills, 1991), and others (Chamberlain, 1988; McCrea, 1991), and might indicate that ratings of work performance are more dependent on overt actions (items in the communication subscale involved taking appropriate action) than internal cognitive processes like sensitivity and insight components. One teacher in this study mentioned that items in the communication subscale were easier to evaluate with a higher degree of accuracy because these items can be observed more directly. Thus, the contribution of communication to overall group differences may be a reflection of a more accurate evaluation or the importance placed on these skills in the workplace.

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Motivational Needs of Students Enrolled in Agricultural Education Programs in Georgia

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ABSTRACT

The purpose of this study was to examine the motivational needs of students enrolled in agricultural education classes in Georgia. The study was based on McClelland's motivational needs theory. The data determined that agricultural students were motivated by the need for achievement and that FFA members had a greater need for achievement, affiliation, and power than non FFA members. The study also determined that female agricultural education students had a higher need for affiliation and power than male students, and that African-American students had a higher need for achievement and power. Freshmen had a lower need for power than students in the upper grades. Caucasians students had a higher need for affiliation: students living on a farm and in a rural setting had a higher need for power than students living in an urban setting.

Introduction

Some educators consider Agricultural education at the high school level to be successful at motivating students to learn. The FFA program has been an integral component of the program aimed at motivating students to learn a variety of different skills at all levels of learning (Phipps and Osborne, 1988). Dormody and Seevers (1994) suggested that students should be encouraged to join the FFA and participate in leadership activities regardless of self-esteem, years in the FFA, age, ethnicity, or place of residence. Cheek, Arrington, Carter, and Randell (1994) recommended that teachers should encourage students to join the FFA. They further wrote that educators should devise strategies to encourage students to actively participate in the FFA and the Supervised Agricultural Experience Program (SAEP). A major problem in Georgia is that the number of students enrolled in FFA is substantially lower than the number enrolled in agricultural education.

This study was unique in that there had not been a study conducted on the subject of motivation and agricultural education students in the state of Georgia. Over the years, a number of national studies have addressed the issue. However, recent national studies concerned with motivation centered around factors educators believed to motivate students but not with the motivational needs as perceived by students (Connors, Moore &

Elliot, 1990; Dormody & Seevers, 1994; Hoover & Scanlon, 1991a; Luft & Giese, 1991; Marshal, Herring & Briers, 1992; Talbert & Larke, 1993).

Theoretical Framework

The motivational theory developed by McClelland (1987) was selected for the theoretical foundation of the study. McClelland's theory described three different types of motivational needs: the need for achievement (nAch), the need for affiliation (nAff), and the need for power (nPower). His theory suggests intrinsic motivators as being critical to meeting the needs of students because they describe a pattern of how a person may behave. He proposed that people have either one or a combination of three needs which motivate them toward a certain pattern of behavior.

McClelland (1962) described the person with a high need for achievement as one who likes situations in which he/she takes personal responsibility for finding solutions to problems. They set moderate achievement goals and take calculated risks. People with a high need for achievement like to make things better. This is indicated by a willingness to compete with a standard of excellence as a guideline to evaluate personal performance. McClelland and Steele (1973) also wrote that they want concrete feedback on how well they are doing.

A student with a high need for achievement does not like work that is too easy or too hard (McClelland, 1987). If a task is too easy, then there is no "real" improvement. If the task is too hard, then by not completing the task, no improvement was accomplished either provide concrete feedback to students with a high need for achievement.

A person with a high need for affiliation tends to think often about the quality of his/her relationships (McClelland, 1987). This person will cherish the positive experiences while worrying about any shortcomings in a relationship. A person with a high need for affiliation will seek the companionship of others and take steps to be liked by them, as well as wanting to project a favorable image. This person will tend to be the peacemaker by smoothing out disagreements and often chooses to work and make decisions in a group.

The characteristics of a person with a high need for power are control and influence (McClelland, 1987). This person will spend more time thinking about how to obtain and exercise power and authority. A person with a high need for power needs to win arguments, persuade others, to prevail, and to obtain positions where they can exert influence (McClelland & Steele, 1973). McClelland (1987) suggested that there are two faces of power. The first face has a negative connotation, one that is concerned with having one's way by controlling and dominating others. The other face of power is called "social" or "institutional." It reflects the process of leadership that uses persuasion and inspiration to help people achieve, to be happy, and to learn. This type of person is one who helps people form and attain goals while not dominating them.

If the motivators can be identified, then behavior may be predicted. By exploring these motivational needs, educators can determine what motivates their students to enroll and participate in agricultural education classes and the FFA. An important part of participating in an activity for any student is that the student is responsible for choosing the activity in which he/she would like to participate in activities such as those provided through FFA (Carter & Nelson, 1984).

There may be a variety of factors that motivate young people to affiliate with a group such as agricultural education and the FFA. In order to begin to comprehend these reasons, agricultural educators need to understand the motivational need structure of their students. The information from this study should aid educators in recruiting students and in developing programs that will help retain students.

Objectives of the Study

The overall objective of the study was to examine motivational needs of students who enroll in agricultural education classes.

The research questions for this study were:

1. What are the motivational needs of students enrolled in secondary agricultural education programs in Georgia?
2. Are there differences in the need for achievement, need for affiliation, and/or the need for power among students enrolled in agricultural education programs in Georgia based on membership/non-membership in the FFA?
3. Are there differences in the need for achievement, need for affiliation, and the need for power of students enrolled in agricultural education programs in Georgia when grouped by: gender; geographic location; ethnic background; and scholastic standings?

Methodology

The population for this study was all of the approximately 15,000 students in Georgia enrolled in agricultural education classes in January and February 1996. According to Kingery, Bryant, Palmer, and Araghi (1989) "the sample size is determined in part by the population size, however, once the population is more than 1,000, the size of the population has little added influence on the sample size" (p. 53). For example according to the table developed by Kingery, et al, a sample of 383 is sufficient for a population of 100,000 subjects. There were approximately 15,000 students enrolled in high school Agricultural Education Programs in Georgia at the time of the study. To ensure an adequate sample, 24 schools having high school agricultural education programs were randomly selected to participate in the study. State Department of Education personnel estimated the average number of students in agricultural education programs in Georgia to be between 90 and 100 students (Wilkinson, J. K. personal communication, November 12, 1996).

To collect data for the study, a questionnaire instrument was developed by the researchers. Some questionnaire items were modified from an instrument used by Chusmir (1989) and some were designed by the researchers. To help ensure validity, the instrument was reviewed by a panel of faculty and graduate and undergraduate students at The University of Georgia. Revisions were made based on input from the first review and the instrument was submitted to the panel for a second review. After additional refinement based on the second review, the instrument was pilot tested using thirty students at a high school that was not part of the study. Minor refinements were made to the instrument as a result of the pilot study. The data from the pilot study were analyzed using Cronbach's alpha to measure the internal consistency reliability. Litwin (1995) suggested that "when developing an instrument it is imperative to test for reliability before using it to collect data from which you will draw inferences" (p. 27). The overall

Cronbach's alpha for the study was .82. The alpha for the five items measuring achievement was .89. The alpha for the items measuring affiliation was .77 and the alpha for power was .81.

The instrument was divided into two parts. The first part was designed to determine the motivational needs of agricultural education students. Five statements focused on each of the three motivational factors (achievement, affiliation, and power) responses were obtained using a five-point Likert scale where 1 equaled Strongly Disagree; 2 equaled Disagree; 3 equaled Undecided; 4 equaled Agree, and 5 equaled Strongly Agree . The second part of the instrument was designed to collect demographic information from the population.

An original contact letter was mailed to the twenty-four schools randomly selected to participate in the study. The letter explained the purpose of the study and asked the instructors for their participation. With the letter, each instructor was sent a response card with a self-addressed, stamped, return envelope. On the card, they were asked to write the name of the school, check whether or not they would participate in the study, indicate their largest class size, the total number of students in the program, and to sign their name. Follow-up phone calls were made to the non-respondents. If the instructors of the non-respondent programs agreed to participate in the study, they were asked to give the size of their largest class and the total number of students in the program. All twenty-four schools agreed to participate in the study. Packets containing a cover letter, an instrument for the teacher, an instruction sheet, and enough questionnaires for all the students in the program were mailed to each of the twenty-four programs participating in the study. Two weeks later, follow-up phone calls were made to the schools who had not returned their packages. A total of 22 out of 24 schools returned the surveys for a return rate of 92%. This resulted in a total of 1,952 respondents which provided substantially more than enough respondents to provide a significance level of .05.

Findings

The first research question was concerned with determining the motivational needs of students enrolled in secondary agricultural education programs. The fifteen questions that examined the need for achievement, need for affiliation, and need for power were summated for each motivator and analyzed with an Analysis of Variance (ANOVA). Because this analysis revealed that there were statistically significant differences in these variables, Tukey HSD (Honestly Significant Differences) method was utilized to compare the group mean scores. These data are presented in Table 1.

Insert Table 1 about here

The need for achievement had the highest mean ($\underline{M} = 3.86$), and the lowest mean was the need for power ($\underline{M} = 3.36$). As a whole, the agricultural education students expressed a higher need for achievement than affiliation or power and a higher need for affiliation than power. However, it should be noted that the mean responses were lower than the "Agree" level of 4.

Research question two determined differences in the need for achievement, need for affiliation, and the need for power among students enrolled in agricultural education programs in Georgia based on membership/non-membership in the FFA. The fifteen questions that examined the need for achievement, need for affiliation, and need for power and the demographic variable of FFA membership/non-membership were examined with a series of t-tests. The results revealed that there were statistically significant differences for need for achievement ($p = .000$), need for affiliation ($p = .007$), and the need for power ($p = .000$) based on FFA membership and non-membership. These data are presented in Table 2.

Compared to non-members, agricultural education students who were members of the FFA had a higher need for achievement ($M = 3.90$), a higher need for affiliation ($M = 3.61$), and a higher need for power ($M = 3.46$) than agricultural education students who were not members of the FFA.

Insert Table 2 about here

Research question three sought to determine differences in the need for achievement, need for affiliation, and the need for power for agricultural education students in Georgia when grouped by gender, geographic location, ethnic background, and scholastic standings. A series of Analysis of Variance (ANOVA) and t-tests were used to determine the differences based on each dependent variable. The first series of t-tests included the variable of gender. There were no statistically significant differences based on gender for the need for achievement ($p = .915$); however, statistically significant differences were identified for the need for affiliation ($p = .004$) and the need for power ($p = .000$) between male and female students. These data are presented in Table 3.

Insert Table 3 about here

Female students had a higher need for affiliation ($M = 3.65$) and a higher need for power ($M = 3.47$) than male students enrolled in agricultural education classes.

The next variable in research question three was geographic location. The first part of geographic location was concerned with students who lived on a farm and students who did not live on a farm. Results from the t-tests are presented in Table 4.

Insert Table 4 about here

The results from the t-tests indicate that there were no statistically significant differences for the need for achievement ($p = .275$) and for the need for affiliation ($p = .906$). However, students living on a farm had a higher need for power ($M = 3.50$) than students who did not live on a farm ($M = 3.33$).

The second category of geographic location was concerned with students who live in a rural or an urban setting. Results from the t-tests are presented in Table 5. They indicate that there were no statistically significant differences in the need for achievement ($p = .118$) and in the need for affiliation ($p = .920$). However, there were statistically significant differences in the need for power ($p = .002$). Students living in a rural setting had a higher need for power ($M = 3.39$) than students living in an urban setting ($M = 3.26$).

Insert Table 5 about here

The third variable for research question three was ethnic background. An Analysis of Variance (ANOVA) was utilized to determine if there were differences in the need for achievement, the need for affiliation, or the need for power based on ethnic background.

The results revealed that there were statistically significant differences for all three variables, the need for achievement ($p = .000$), need for affiliation ($p = .001$), and need for power (p = .032). The data for these analysis are illustrated in Table 6, Table 7, and Table 8.

Insert Table 6 about here

Because differences in the need for achievement were found to be statistically significant, Tukey HSD (Honestly Significant Differences) method was utilized to compare the means of the groups. Agricultural education students who are African-American expressed a higher need for achievement (M = 4.04) than students who are classified as others (M = 3.56) or Caucasian (M = 3.86). Agricultural education students who are Caucasian (M = 3.86) had a higher need for achievement than students classified as other (M = 3.56).

Insert Table 7 about here

Caucasian agricultural education students (M = 3.60) had a higher need for affiliation than African-American students(M = 3.52) and students classified as others (M = 3.32). African-American students (M = 3.52) had a higher need for affiliation than students classified as other (M = 3.32).

Insert Table 8 about here

African-American agricultural education students (M = 3.41) had a higher need for power than agricultural students who are classified as others (M = 3.14) and Caucasian (M = 3.36). Caucasian agricultural education students (M = 3.36) had a higher need for power than students classified as other (M = 3.14).

The last category in this research question was the scholastic standing of the students. Results of the ANOVA revealed no significant differences among freshmen, sophomores, juniors, and seniors in regard to achievement and affiliation. However, freshmen students had a lower need for power than did sophomores, juniors and seniors (see table 9).

Insert Table 9 about here

Conclusions

The findings reflected several significant differences; however these differences were, in most cases only a fraction of step between the scale indicators ranging from strongly disagree to strongly agree. Findings, conclusions, and recommendations should be viewed and assessed in light of these differences.

1. As a whole the respondents were less than agreeable with the 3 needs as expressed by McClelland. Almost all of the mean responses were less than 4 (Agree) which seems to suggest that the students were not strongly motivated by the three motivators.

2. As a whole, agricultural education students had a higher need for achievement than the need for affiliation. Agricultural education students' need for affiliation was stronger than their need for power.

3. Agricultural education students who join the FFA had a higher need for achievement, a higher need for affiliation, and a higher need for power than agricultural education students who did not join the FFA.

4. Female agricultural education students had a higher need for affiliation and a higher need for power than male students. However, there was no difference in the need for achievement between male and female agricultural education students.

5. Students living on a farm had a higher need for power than students not living on a farm. However, there were no differences in the need for achievement and the need for affiliation between students living on a farm and students not living on a farm.

6. Students living in a rural setting had a higher need for power than students living in an urban setting. There were no differences in the need for achievement and the need for affiliation between students who lived in a rural setting and students who lived in an urban setting.

7. Agricultural education students who were African-American had a higher need for achievement than students who were classified as others and Caucasian. Agricultural education students who were Caucasian had a higher need for achievement than students classified as other. Caucasian agricultural education students had a higher need for affiliation than African-American and students classified as others. African-American students had a higher need for affiliation than students classified as others. African-American agricultural education students had a higher need for power than agricultural students who are classified as others and Caucasian. Caucasian agricultural education students had a higher need for power than students classified as other students.

8. Freshmen had a lower need for power than students the higher grades. This is probably a reflection of the age difference and the maturing process.

Recommendations

The following recommendations are based on the findings and conclusions of this study.

1. Since the data suggested that students are not strongly motivated by the'3 motivators advocated by McClelland, more research should be conducted to determine if there are other areas that are stronger motivators. However, the data in the study should provide a comparison for the motivators as described by McClelland. This should give educators an idea of how different sub groups are motivated.

2. Agricultural educators should emphasize activities that appeal to agricultural education students' need for achievement more than the need for affiliation. They should also emphasize activities that appeal to the students need for affiliation more so than the need for power. Even though the need for power is the weakest need of agricultural students, it should not be overlooked. African-American students have this as a high need, and situations should be created for these students.

3. Students who enroll in the FFA have a higher need for achievement, need for affiliation, and the need for power than students who do not join the FFA. Agricultural educators can utilize the agricultural education program to meet these needs. For example, students with a high need for achievement are hardworking, energetic, determined and productive (Chusmir, 1990). They set moderate goals and take calculated risks. These students like to work with a standard of excellence because it provides a guideline to evaluate personal performance (McClelland & Steele, 1987).

4. Female agricultural students need activities that will meet their need for affiliation and the need for power more so than male agricultural students. If teachers can provide these needs, then female students should be motivated to participate. Agricultural educators should be aware that female students are motivated to participate in different ways than male students.

5. Students living on a farm had a higher need for power than students not living on a farm. As there are more students who do not live on farms, agricultural educators should try to meet the need for power of the students living on a farm, as well as the greater motivational needs of nonfarm students' achievement and affiliation to motivate participation.

6. Students living in a rural setting had a higher need for power than students living in an urban setting. As agricultural educators try to increase diversity within their programs, they should try to meet the need for power of the students living in a rural setting and the motivational needs of urban students' need for achievement and need for affiliation in order to motivate them to participate.

7. Agricultural education has traditionally been composed of white, rural male students. Agricultural educators must provide opportunities to meet the motivational needs of African-American and students classified as others to participate.

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Table 1

Means, Standard Deviations, and Analysis of Variance for Agricultural Education Students and the Need for Achievement, Affiliation, and Power

Source	M	SD	df	F	p > F	Tukey Post Hoc
Agriculture Education Students			2	387.4	.0001	1>2>3
Motivational Needs			1902			
Achievement (1)		3.86	.626			
Affiliation (2)	3.58	.672				
Power (3)	3.36	.781				
Corrected Total			1904			

Table 2

T-test for nAch, nAff and nPower of Agricultural Education Students Based on FFA Membership/Non-membership

FFA Membership	n	M	SD	t-value	p
		Achievement			
Yes	1344	3.90	.614	4.06	.000
No	605	3.79	.646		
		Affiliation			
Yes	1344	3.61	.664	2.69	.007
No	605	3.52	.688		
		Power			
Yes	1344	3.46	.767	8.95	.000
No	605	3.13	.761		
Total	1949				

Table 3

T-test for Gender Differences and nAch, nAff and nPower

Gender	n	M	SD	t-value	p
		Achievement			
Male	1319	3.87	.638	.107	.915
Female	629	3.86	.603		
		Affiliation			
Male	1319	3.55	.688	-2.89	.004
Female	629	3.65	.628		
		Power			
Male	1319	3.31	.787	-4.34	.000
Female	629	3.47	.760		
Total	1948				

Table 4

T-test for nAch, nAff, and nPower based on Geographic Location: Students Living on a Farm vs. Students not Living on a Farm

Geographic Location	n	M	SD	t-value	p
			Achievement		
Live: On Farm	380	3.90	.641	1.09	.274
Not on Farm	1565	3.86	.622		
			Affiliation		
Live: On Farm	380	3.58	.688	-.118	.906
Not on Farm	1565	3.58	.668		
			Power		
Live: On Farm	380	3.50	.824	4.08	.000
Not on Farm	1565	3.33	.765		
Total	1945				

Table 5

T-test for nAch, nAff, and nPower based on Geographic Location: Students Living in a Rural Setting and Students living in an Urban Setting

Geographic Location	n	M	SD	t-value	p
		Achievement			
Rural	1514	3.88	.618	1.56	.118
Urban	431	3.82	.651		
		Affiliation			
Rural	1514	3.58	.672	.1010	.920
Urban	431	3.58	.672		
		Power			
Rural	1514	3.39	.775	3.07	.002
Urban	431	3.26	.789		
Total	1945				

Table 6

Means, Standard Deviation, and Analysis of Variance for Ethnic Background and the Need for Achievement

Source	M	SD	df	F	p > F	Tukey Post Hoc
Ethnic Background			2	16.51	.000	1 > 2&3 3 > 2
African American (1)	4.04	.58				
Other (2)	3.56	.99				
Caucasian (3)	3.86	.61				
Achievement			1946			
Corrected Total			1948			

Table 7

Means, Standard Deviations, and Analysis of Variance for Ethnic Background and the Need for Affiliation

Source	M	SD	df	F	p >F	Tukey Post Hoc
Ethnic Background			2	6.84	.001	3 >1&2 1 > 2
African-American (1)	3.52	.71				
Other (2)	3.32	.86				
Caucasian (3)	3.60	.66				
Affiliation			1946			
Corrected Total			1948			

Table 8

Means, Standard Deviation, and Analysis of Variance for Ethnic Background and the Need for Power

Source	M	SD	df	F	p > F	Tukey Post Hoc
Ethnic Background			2	3.44	.032	1 > 2&3 3 > 2
African-American (1)	3.41	.76				
Other (2)	3.14	1.08				
Caucasian (3)	3.36	.77				
Power			1946			
Corrected Total			1948			

Table 9

Means, Standard Deviations, and Analysis of Variance for Scholastic Standing and the Need for Power

Source	M	SD	df	F	p > F	Tukey Post Hoc
Scholastic Standing			3	8.12	.0001	1 < 2,3,4
Freshman	3.23	.77				
Sophomore	3.37	.77				
Junior	3.41	.79				
Senior	3.49	.78				
Achievement			1944			
Corrected Total			1947			

Note. 1 = freshman. 2 = sophomore, 3 = junior, and 4 = senior.

IMPACT OF ENVIRONMENTAL VARIABLES ON COMMUNITY COLLEGE DENTAL ASSISTING STUDENTS WHO ARE AT-RISK

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Abstract

The purpose of this study was to examine the environmental variables of faculty contact, peer interaction, and family encouragement with respect to community college students enrolled in Illinois Dental Assisting Programs, and to determine whether these three environmental variables predict persistence to graduation.

The survey research was cross-sectional and ex-post facto. A simple random sample of 206 students was selected from the 450 students admitted into the Illinois Dental Assisting Programs during the academic years of 1993-94, 1994-95, and 1995-96. The direct mailed survey instrument achieved a 59% return. Analysis of the data were performed using descriptive, correlational, and discriminant analyses. Findings suggest that the environmental variables influence persistence in the study's population.

Introduction

Across the United States, community colleges enroll 55% of the first-time college students. Of these students, at least one-third are considered at-risk for persistence (Roueche & Roueche, 1993). Over the years, persistence of college students has been studied, resulting in the development of several student retention models. Tinto's (1975) predictive persistence theory posits that the higher the quality of academic and social integration of the student into the institution, the more likely the student will persist in college. Tinto's theory has been tested by many researchers such as Bean (1980), Pascarella and Terenzini (1980), Munro (1981), and Pascarella and Chapman (1983). The findings of the researchers generally support the constructs of his theory. However, the research was performed on traditional age students at primarily residential four-year institutions. Even so, no previous research has focused on the unique persistence patterns of community college students considered at-risk because they are older, commute to school, and are likely to attend college part-time. Therefore, in light of the lack of research on students who are at-risk, this research study was conceived.

The purpose of this study was to examine the environmental variables of faculty contact, peer interaction, and family encouragement with respect to community college students enrolled in Dental Assisting Programs in Illinois, and to determine whether these three environmental variables predict persistence to graduation. Also, background and academic variables were examined with respect to persistence.

Specifically, the study attempted to answer the following three research items:

1. How do the characteristics of students in Illinois Dental Assisting Programs who persist compare to those who do not persist to graduation?

2. Is there a relationship between the environmental variables of faculty contact, peer interaction, and family encouragement, and the persistence of community college students enrolled in Dental Assisting Programs in Illinois?

3. While examining the background variables (i.e., gender, age, race/ethnic origin, educational goals, enrollment status, and high school performance expressed as Grade Point Average (GPA), finances, parent's education, hours of employment, and family responsibilities) and academic variables (i.e., remedial education and college performance expressed as GPA), do the environmental variables of faculty contact, peer interaction, and family encouragement predict persistence to graduation?

Persistence Theory

The interchangeable terms persistence and retention can mean many things. Persistence may mean that a student transfers or persists to a four-year institution after completing coursework at a two-year institution. Persistence may also mean that a student completed a course or graduated from a program (Bean & Metzner, 1985; Pascarella & Terenzini, 1991; Tinto, 1975). Because the population used in this dissertation involved students in health occupations programs that usually have a goal of graduation from a one-year program, persistence or retention means that the students persisted to graduation.

Postsecondary student retention has been studied using a theoretical framework developed by Tinto (1975, 1988, 1993). The Tinto model focuses on interaction between the student and the institution. Tinto's model hypothesizes that students do not persist in college if they are not integrated into the academic and social environment. A student's academic integration is measured by his or her academic performance and intellectual development. A student's social integration is determined by the quality of peer-group and faculty interactions. He hypothesizes that students begin their college experience with a pre-existing set of personal goals and ideas concerning college attendance. The formulation of these goals and ideas is influenced by family, peers and previous academic experiences. These goals and ideas will change over time as the student interacts with the social and academic systems of the institution. Positive encounters with the social and academic systems will presumably lead to retention of the student to goal completion, while negative interactions tend to reduce the acclimation of the student into these systems, leading the student to possibly drop out of college.

Tinto's (1975) model has been used extensively as an inquiry tool for understanding the persistence behavior of college students (e.g., Aitken, 1982; Bean, 1980; Munro, 1981; Pascarella & Terenzini, 1979, 1980, 1983; Terenzini & Pascarella, 1977). Generally, these studies have supported Tinto's construct that a high level of academic and social integration leads to a higher commitment to a student's educational goal, which leads to persistence in college. However, Tinto's model is usually applied to four-year institutions that are residential in nature, rather than to two-year colleges that are commuter in nature. Because community college students do not generally live on campus, it is harder for them to get acclimated into the social and academic systems of the institution, which Tinto posits as important to their college persistence. Therefore, to achieve this acclimation, the community college student must depend more on contact with faculty members, college peers and family encouragement (Pascarella & Terenzini, 1977; Roueche & Roueche, 1993).

Persistence Model

Through their research, Pascarella (1985) and Bean and Metzner (1985) have indicated that the environmental variables of peer interaction, faculty contact, and family encouragement may contribute to a student's persistence to graduation. Therefore, the persistence model in Figure 1 depicts these three tenets as independent variables. The background variables (i.e., gender, age, race/ethnic origin, educational goals, enrollment status, and high school performance expressed as Grade Point Average (GPA), finances, parent's education, hours of employment, and family responsibilities) and academic variables (i.e., remedial education and college performance expressed as GPA) have been used in other persistence studies (Bean & Metzner, 1985; Pascarella, 1985; Pascarella & Chapman, 1983). The variable of remedial education is the exception. It has not been tested in other studies. However, the researcher considered it an important variable in light of the number of community college students who need and who take remedial courses. Therefore, the effect of remedial courses on persistence should be considered. The dependent variable was persistence to graduation. Most studies determine persistence by a student returning to school the next term or school year. However, because the population sampled in this study was from one-year certificate programs, graduation from the program was the best indication of persistence (see Figure 1).

Method

The survey research was cross-sectional and ex-post facto. The instrument designed for the survey research was a direct-mail survey, which was mailed to the homes of the respondents.

Student Population and Sample Selection

The student population for this study was all students from seven of the eight Dental Assisting Programs in Illinois. One program was excluded because it is structured under an experimental design approved for study by the American Dental Association. A random sample of students was selected from the students who were admitted into the Dental Assisting Programs during the academic years of 1993-94, 1994-95, and 1995-96. The population during this timeframe numbered 450. The random sample was drawn from mailing lists provided by each Dental Assisting Program director. The program directors indicated which students had graduated from their programs. Each name was assigned a random number and numbers were then drawn from a collective pool until the determined number for the random sample was achieved. The sample size was 206 and was determined by using the following formula developed by Krejcie and Morgan to determine sample size from a given population (Isaac & Michael, 1981).

Instrumentation

The survey instrument was designed by the researcher but influenced by an instrument designed by Pascarella and Terenzini (1980) which was based on research of Wilson, Wood, and Gaff (1974).

The Illinois Dental Assisting Programs Questionnaire consisted of five sections which were: Faculty Contact, Peer Interaction, Family Encouragement, Background Information, and Additional Factors. The survey was designed so that both graduates and nongraduates of the Dental Assisting Programs could use the same survey. The survey instrument employed both Lickert type scaled and open ended items.

Validity

The content validity of the instrument was determined by a panel of education leaders. Each panel member contributed valuable input based on their area of expertise. Each person was asked to read the survey and make comments as to its content. Then, they were asked to evaluate the instruments readability and objective accomplishment, which influences reliability (discussed in next section). Revisions were made accordingly.

Data Analysis

The total number of surveys returned was 122 out of 206, representing a 59% return rate. The collected data were tabulated and analyzed using the Statistical Package for Social Sciences (SPSS) software. Three research questions were examined in this study. Research question one pertained to background and academic characteristics of students in Illinois Dental Assisting Programs who persisted compared to those who did not persist to graduation. Descriptive analysis and inferential analysis using independent sample t-tests and chi-square were used to analyze the variables. Research question two pertained to relationships between the environmental variables of faculty contact, peer interaction, and family encouragement and persistence. A Pearson product-moment correlation analysis was applied to each category. Research question three pertained to whether the environmental variables predict persistence to graduation. Discriminant analysis was applied to the data.

Findings and Discussion

As stated earlier, the purpose of this study was to examine the three environmental variables of faculty contact, peer interaction, and family encouragement with respect to community college students enrolled in Dental Assisting Programs in Illinois, and to determine if these variables predict persistence to graduation.

How the Characteristics of Dental Assisting Students Related to Persistence

In order to answer research question 1, how do the characteristics of students in Illinois Dental Assisting Programs who persist compare to those who do not persist to graduation, background and academic variables were examined. The background variables examined were: gender, age, race/ethnic origin, educational goals, enrollment status, high school performance measured by grade point average (GPA), hours of employment, finances, parents' education, and family responsibilities. The academic variables of college performance as measured by GPA and remedial education were also included in this examination.

The database for this research consisted of 122 returned questionnaires Of those returned, 44 questionnaires (36%) were answered by nongraduates and 78 questionnaires (64%) were answered by graduates. The respondents were 97% female (4 male and 118 female) and their ages ranged from 17 to 59 years. The mean age for nongraduates was 29 years and the mean age for graduates was 25 years. A t-test was performed to determine if there was a statistically significant difference in age between nongraduates and graduates. The t-test yielded a significant difference in age between the two groups at the $p<.05$ level. Although, at least half of the respondents were in the traditional age range of 17-22, the nongraduates had a much higher percent of students over the age of 40, 16% for nongraduates and 3% for graduates. Students who persisted to graduation tended to be younger than students who did not persist. Furthermore, nongraduates had a higher concentration of students in age categories that usually had more outside responsibilities such as children, spouses, and financial obligations.

The dental assisting graduates were found to be 90% Caucasian and the nongraduates were 80% Caucasian. A chi-square analysis indicated that race/ethnic origin was not associated with persistence, suggesting racial/ethnic origin did not influence persistence to graduation for the dental assisting students.

The respondents identified, in an open-ended item, their educational goal commitment by indicating the highest education level they would like to attain in their lifetime. The majority of graduates, 47%, indicated the associate degree as the highest lifetime educational goal. The majority of nongraduates, 38%, indicated the level of bachelor's degree as the highest lifetime goal. Overall, 59% of the nongraduates and 48% of the graduates indicated the highest lifetime educational goal at the bachelor's degree or above. A t-test indicated no statistically significant difference between the two groups at the $p<.05$ level.

Part of educational goal commitment is importance of completing the Dental Assisting Program. The respondents were asked to indicate how important program completion was to them by choosing between Not Important, Somewhat Important, Important, and Very Important. The selection of Very Important was chosen most often by nongraduates and graduates, 50% and 94% respectively. A t-test was applied to the importance of program completion. The results indicated a significant difference between graduates and nongraduates at the $p<.05$ level. The previous findings indicated that both graduates and nongraduates had similar lifetime educational goals and therefore, goal aspirations may not influence persistence to graduation. However, when asked to rate how important it was to complete the Dental Assisting Program, more graduates rated it as Very Important than nongraduates. The findings suggest that students who place a high importance on graduating from or finishing a program were more likely to persist to that goal.

Enrollment status was addressed by having the respondents indicate whether they attended part-time or full-time. Of the 44 nongraduate respondents, 21 (48%) attended part-time and 23 (52%) attended full-time. Of the 78 graduate respondents, 17 (22%) attended part-time and 61 (78%) attended full-time. This finding reveals that 26% more graduates attended full-time than nongraduates. A chi-square analysis was conducted to determine whether enrollment status (part-time, full-time) was associated with persistence to graduation for the dental assisting students. The chi-square was statistically significant at the $p<.05$ level indicating students who attended full-time were more likely to graduate than those who attended part-time.

Respondents were asked to report their high school GPA. Most of the nongraduates (68%) and graduates (75%) reported at least a B average (3.0 or higher). The nongraduates indicated a high school GPA mean of 3.05 on a four-point scale where A=4.0. Whereas, the graduates indicated a high school GPA mean of 3.22. A t-test indicated no significant difference between graduates and nongraduates on high school GPA at the $p<.05$ level. Although graduates tended to have a higher high school GPA as compared to nongraduates, the difference was not statistically significant. Therefore, high school GPA may not be a good indicator of students' ability to persist in college.

The respondents indicated, in an open-ended item, how many hours per week they were employed outside the home. Nongraduates indicated they were employed a mean of 26-30 hours per week. Graduates indicated that they were employed a mean of 21-25 hours per week. Furthermore, graduates were much less likely to work at all outside the home. The findings show that 42% of the graduates did not work compared to only 25% of the nongraduates. Also nongraduates (32%) were much more likely than graduates (14%) to work in excess of 30 hours per week. A t-test indicated a significant difference in hours of employment and persistence. The results suggest dental assisting students who worked fewer hours outside the home were more likely to persist to graduation than those who worked more hours.

The respondents indicated if they received financial aid while enrolled in the Dental Assisting Program. Of those respondents who were graduates, 41% (32 out of 78) indicated they received financial aid. Whereas, of those respondents who were nongraduates, 23% (10 out of 44) indicated they received financial aid. A chi-square analysis indicated an association between persistence to graduation and receipt of financial aid at the $p<.05$ level. These findings suggest dental assisting students who received financial aid were more likely to persist to graduation than those who did not receive it.

The respondents were asked to indicate the highest level of education achieved by both parents. Parents of nongraduates were less likely to finish high school than parents of graduates. For nongraduates, 31% of mothers and 33% of fathers did not graduate from high school compared to 22% of mothers and 21% of fathers for graduates. Additionally, findings indicate that for nongraduates, 41% of mothers and 33% of the fathers indicated some college or higher compared to 39% of mothers and 42% of fathers for graduates. A chi-square analysis indicated no significant association with the two groups and persistence at the $p<.05$ level. Although there seems to be some differences between parents' education of nongraduates and graduates, the results indicate that the level of parents' education may not influence the persistence of dental assisting students to graduation.

The variable of family responsibilities was addressed by asking respondents to give their marital status and number of dependent children living with them during the time they were in the Dental Assisting Program. If they had children, respondents were asked if they had adequate daycare. Of the nongraduates, 50% were married or had a live-in significant other and 50% had dependent children living with them. Only one person indicated a problem with adequate daycare. Of the graduates, 40% were married and 32% had dependent children living with them. Again, only one person indicated a problem with adequate daycare. A chi-square analysis was performed on family status, dependent children, and adequate daycare, and these variables were found to be independent from the variable of persistence to graduation. Although both groups had a moderately high percent of students with dependent children which implies increased responsibilities, the findings suggest that daycare was not a problem for either group and marital status or dependent children did not seem to impact persistence.

The academic variable of remedial education was addressed by respondents indicating whether they took remedial classes in remedial English, remedial math, remedial reading, and study skills, and if they did take such a course, did they complete it. The analysis indicated that of the nongraduates 33% took and completed remedial English, 18% took and completed remedial math, 11% took and completed remedial reading, and 11% took and completed study skills. The analysis indicated that of the graduates, 58% took and completed remedial English, 43% took and completed remedial math, 24% took and completed remedial reading, and 22% took and completed study skills. A chi-square analysis was performed indicating a significant relationship between taking and completing remedial English and remedial math and persistence to graduation at the $p<.05$ level. No significant relationship was shown between taking and completing remedial reading or study skills courses and persistence to graduation. In fact, few students, whether graduates or nongraduates, took remedial reading or study skills compared to remedial English and remedial math.

Respondents were asked to indicate their college GPA at the end of their last semester in the Dental Assisting Program as a measure of college performance. Analysis indicated that 72% of the nongraduates and 83% of the graduates received a 3.0, B average, or better. An independent t-test analysis indicated a significant difference between the two groups at the $p<.05$ level. Although there seems to be a significant difference between the two groups, both groups indicated a mean of better than 3.0, which equates to a B grade average on a 4-point scale where an A is 4.0. Therefore, the results seem to indicate that academic failure is an unlikely reason for dental assisting students to not persist in college.

How Environmental Variables Related to the Persistence of Dental Assisting Students

In order to answer research question two, is there a relationship between the environmental variable of faculty contact, peer interaction, and family encouragement on the persistence of community college students enrolled in Dental Assisting Programs in Illinois, data analyses using descriptive statistics and Pearson product-moment correlation were performed.

The independent environmental variables were addressed in the first 16 survey items of the survey instrument. In those items, the respondents indicated their preference among the selections of Never, Sometimes, Almost Always, and Always. This scale was designed to show how often the respondent interacted with Dental Assisting faculty members outside of the classroom, interacted with college peers, and received encouragement from family members. Pearson product-moment correlational analysis was applied to the independent environmental variables and persistence.

Considering the environmental variable of faculty contact, the results indicated a significantly positive relationship between the following items and persistence at the $p<.05$ level: I talked to a Dental Assisting instructor about my academic progress, I talked to a Dental Assisting instructor about my academic progress, I socialized with a Dental Assisting instructor outside of school, and I talked informally with a Dental Assisting instructor about nonschool/nonproblem topics.

Results indicated that the following items did not demonstrate a significant relationship with persistence at $p<.05$: I talked to a Dental Assisting instructor about basic program information such as how many credit hours I need, I talked to a Dental Assisting instructor concerning my career choices and goals, I discussed personal problems with a Dental Assisting instructor, and I discussed a campus-wide issue such as parking with a Dental Assisting instructor.

The findings suggest that graduates as compared to nongraduates were more likely to have discussions outside of class on academic progress and topics from class that they did not understand. In fact, 69% of the graduates indicated that they Almost Always or Always discussed academic progress with a Dental Assisting faculty member compared to 46% of the nongraduates. Similarly, 68% of the graduates indicated that they Almost Always or Always discussed a misunderstood topic from class with a Dental Assisting faculty member compared to 50% of the nongraduates. They were also more likely to discuss nonschool/nonproblem issues and to socialize with the instructor outside of school. Both nonschool/nonproblem issues and to socialize with the instructor demonstrated a positive correlation with persistence (see Tables 3). However, few respondents indicated Almost Always and Always . Nevertheless, respondents indicated Sometimes as the highest frequency of socializing with faculty (14% of nongraduates and 39% of graduates) and discussing nonschool/nonproblem issues (41% of nongraduates and 50% of graduates). The findings suggest that even some frequency of socializing with faculty outside of school and discussing nonschool/nonproblem issues with them had a positive impact on the persistence of dental assisting students.

Additionally, analysis reveals 52% of the respondents indicated that they Never or Sometimes discussed program information or career choices outside of class. The respondents also indicated that 83% Never or Sometimes discussed personal problems and 82% Never or Sometimes discussed a campus-wide issue with a faculty member outside of class. The low frequency of faculty contact by both dental assisting graduates and nongraduates suggests these items did not influence persistence. Results of the Pearson product-moment correlation analysis did not indicate a correlation to persistence for these items.

The next environmental variable addressed was peer interaction. Pearson product-moment correlation analysis was applied to the independent variable items associated with peer interaction. The results indicate the following items had a significant positive relationship between the variable items of peer interaction and persistence at the $p<.05$ level: While in the Dental Assisting Program, how often did you study with one or more of your peers?, While in the Dental Assisting Program, how often did you talk with one or more of your peers about school problems?, While in the Dental Assisting Program, how often did you get together with one or more peers outside of school?, and While in the Dental Assisting Program, how often did you talk with one or more of your peers about personal problems?

The findings suggest graduates demonstrated a higher frequency of peer interaction as compared to nongraduates. Graduates Almost Always or Always study with their peers (56%), discuss school problems (77%), discuss personal problems (49%), and socialize with peers outside of school (43%) compared to nongraduates (29%, 52%, 16%, and 11% respectively). Therefore, graduates were more likely to study with their peers, talk to their peers about school problems and personal problems, and socialize with peers outside of school, which positively related to persistence to graduation.

The independent variable of family encouragement was addressed in survey items designed to determine the influence of family encouragement on the respondents' college persistence. A Pearson product-moment correlation analysis was administered to the independent variable items to assess the relationship between family encouragement and persistence. The results reveal that the following items had a significant positive relationship with persistence at the $p<.05$ level: During the time you were in the Dental Assisting Program, how frequently did you receive encouragement to complete your educational goals from a family member?, and How often did positive comments from a family member encourage you to continue in the Dental Assisting Program? Furthermore, a Pearson product-moment correlation analysis indicated that the following items did not have a positive relationship with persistence: While in the Dental Assisting

Program, how frequently did you receive negative comments from a family member about going to college?, and How often did negative comments from a family member make you think about quitting the Dental Assisting Program?

The findings show that nongraduates (23%) indicated that they Never or Sometimes received encouragement from family members to complete the Dental Assisting Program, which is a higher rate than graduates (14%). Additionally, twice as many nongraduates (32%) as graduates (16%) indicated that they Never or Sometimes received encouragement from family members to continue in the program. Therefore, nongraduates received less encouragement from family members. The findings suggest that graduates were more likely than nongraduates to perceive they had more encouragement from family members to continue in the Dental Assisting Program and complete their education which may have had a positive impact on their persistence in college. The findings also show both groups felt they received few negative comments from family members and therefore, negative comments did not seem to impact persistence to graduation.

How Well Did The Environmental Variables Predict Persistence

In order to answer research question 3, discriminant analysis were applied to the environmental variables and the dependent variable of persistence. Research question 3 states: While examining the background variables (e.g., gender, race/ethnic origin, age, educational goals, enrollment status, high school performance expressed as GPA, finances, parents education, hours of employment, and family responsibilities) and academic variable (i.e., college performance expressed as GPA and remedial education), do the environmental variables predict persistence? The analysis used 122 respondents (44 nongraduates and 78 graduates). When an observation was missing, the mean for that category was used in its place.

In order to analyze if the environmental variables of faculty contact, peer interaction, and family encouragement predicted persistence, a classification discriminant function was performed. The analysis correctly predicted nongraduate group membership by 88.6% and graduate group membership by 82.1% yielding a percent of grouped cases correctly classified as 84.4%. The probability that respondents would be classified correctly is 50% (Norusis, 1994). Therefore, 84.4% is considered a high percent of correctly classified cases, indicating that the Model for Community College Students Who Are At-Risk for Persistence, as discussed earlier, can be used to predict persistence for students in the Dental Assisting Programs.

Conclusions and Implications

1. Community college Dental Assisting Program faculty members should carefully design opportunities to be available to students for one-on-one communication. To ensure that faculty members have the skills and understanding to help students who are at-risk, institutions should support continuing professional education or advanced graduate education designed to enhance faculty members' understanding of student persistence problems.

2. Community college faculty members need to create a classroom environment that encourages peer interaction. To ensure that faculty members have the skills to facilitate this type of classroom environment, community colleges should support continuing professional education or advanced graduate education designed to teach faculty members how to utilize and implement group learning in the classroom.

3. Community college faculty members should provide counseling to students on the impact of family encouragement to college persistence. To ensure that faculty members have the skills and understanding to help students who are at-risk, institutions should support continuing professional education or advanced graduate education designed to enhance faculty members understanding of student problems and to gain counseling skills to better deal with them. Additionally, institutions should employ qualified counseling staff members who are available to help advise faculty members on appropriate counseling techniques.

4. Community colleges should require all students to be tested in English and math proficiency and remedial courses should be mandated before students enter an occupational program. . This would require students, who were not proficient in English, math and other basic skills such as reading and study skills, to take and complete remedial courses as needed.

5. Policymakers at the federal, state, and local levels should support financial aid for students who are at-risk for persistence. Findings from this study demonstrated that dental assisting students who worked were less likely to graduate. Therefore, policymakers must ensure availability of financial aid to students who are at-risk so they have time to invest in college.

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STUDENT PERCEPTIONS OF THE AFFECTIVE EXPERIENCES ENCOUNTERED IN DISTANCE LEARNING COURSES

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Abstract

The purpose of this study was to compare the perceptions of remote-site distance learning students, host-site distance learning students, and traditional classroom students toward the affective experiences they encounter while taking courses from the College of Education at Valdosta State University. Results of the study indicated no significant differences between the three groups in regard to student/teacher interaction or course structure. However, the remote- and host-site groups responded significantly less positevely to questions dealing with the physical learning environment than did students in the traditional group, and the host-site group responded significantly less positevely to questions dealing with overall course enjoyment/satisfaction than did students in the traditional group.

Introduction

In many rural areas, the only way to receive some type of postsecondary education is for learners to enroll in a specialized program or curriculum at an institution a considerable distance from home. Evening and weekend courses are also used, but this is often impractical for many teachers and students due to travel and expense involved (Beare, 1989). Delivery of instruction to learners at distant sites using teleconferencing equipment that permits two-way audio and visual interaction has been used recently to resolve many problems associated with geographic distance and isolation. Distance education can make virtually any subject available to an individual learner in the most solitary of geographic locations; to the elderly, unable to travel, to the house-bound parent of young children, to the poor, unable to relocate, to special needs populations, to the highly mobile service persons and other workers, and to all those who prefer to control the timing, location and pace of their study (Moore, 1989).

Basically, a two-way interactive television system provides an opportunity for an instructor at a "home site" to teach students geographically removed at locations called "remote sites." Students in each remote site can see, hear, and communicate live with the home site and other remote sites. This is accomplished by modifying the classroom to accommodate specially equipped cameras, microphones, and television monitors. The signal between home and remote sites are relayed via microwave, coaxial cable, telephone lines, or fiber optics (Kitchen, 1988).

Effectiveness of Prior Distance Education Efforts

At the postsecondary level, a number of studies have been conducted comparing the educational effectiveness of distance learning technologies (Barker & Platten, 1988; Beare, 1989; Kabat & Friedel, 1990; Ritchie & Newby, 1989). Many of these studies have compared the achievement of remote-site distance learning students with traditional classroom students. Almost without exception these studies have shown that distance learning students achieve as well as students taking courses via traditional methods (Kendall & Oaks, 1992).

Most prior research on distance education has dealt with technologies other than two-way audio and visual interaction. However, study after study has showed that comparable performance can be expected from students regardless of the medium (Ritchie & Newby, 1989). The new two-way interactive distance education technology that is available today seems to be the next best thing to being there. However, the student is not "there," and this still creates concerns. Kabat & Friedel (1990) contended that for some students, learning via technology is awkward and not conducive to their learning style. Not all students feel comfortable learning from a `distant' teacher, and many students feel cheated that they do not get to know classmates at other class sites. Anderson's (1978) study indicated that students do learn by televised instruction, that they prefer two-way audio interaction over videotaped instruction, and that they prefer live instruction to either kind of televised instruction.

The Need for Two-Way Interactive Television

Despite present and past research to support the efficacy of earlier modes of distance learning, it is well known that this approach is generally held with low regard by the educational community (Barker & Platten, 1988). The major problem with earlier methods of distance education was a lack of student/teacher interaction. "Educators have repeatedly stressed the importance of instructional interaction within the learning process" (Ritchie & Newby, 1989, p. 36). The use of two-way interactive television in distance education that fosters live, teacher-to-student and student-to-student interactivity enables distance education to assume its respected role in the educational process (Barker & Platten, 1988).

Distance Learning at Valdosta State University

In an effort to provide access to educational programs and services that are responsive to personal and community needs, Valdosta State University in Valdosta, Georgia has initiated a new program of offering courses via live two-way interactive television. Initial findings based on student evaluations of courses taken in the College of Education at Valdosta State University reveal several advantages and disadvantages of the distance learning system. Remote-site students have commented that taking a distance learning course saves driving time, makes it easier to take classes, improves the chance of getting a full-time faculty instructor instead of an adjunct instructor, saves money on baby-sitting, and gives peace of mind to be closer to home in case of emergencies. However, problems such as the lack of personal contact with professors and other students, the difficulty in getting assignments to campus, a hesitancy to ask questions, equipment problems, and distractions also have been noted.

Purpose and Objectives

The purpose of this study was to compare the perceptions of remote-site distance learning students, host-site distance learning students, and traditional classroom students toward the affective experiences they encounter while taking courses from the College of Education at Valdosta State University. A review of literature revealed that cognitive outcomes are virtually the same between distance education students and traditional classroom students. However, these same studies mentioned that affective aspects such as student/teacher interaction, overall course enjoyment/satisfaction, course structure, and the physical learning environment were often lower for distance education students than traditional classroom students. This study focused on these affective experiences encountered by distance learning students.

Procedures

Design of the Study

The study used a causal-comparative design, and utilized a survey instrument to collect necessary data. The survey instrument used a side-by-side Likert scale to measure student responses. The four-point Likert scale was chosen to force respondents to either agree or disagree with each statement. For each statement on the instrument, the student was able to choose among the following: 4 = Strongly Agree; 3 = Agree; 2 = Disagree; and 1 = Strongly Disagree. Negatively worded statements were coded and reversed during data analysis. The primary independent variable in this study was the location of the student. Due to the higher mean age of remote-site students, age was used as a covariate to control for the age differences among the three groups. The dependent variables were perceptions of the physical learning environment, perceptions of student/teacher interaction, perceptions of course structure, and perceptions of overall course enjoyment/satisfaction.

Population and Sample

The population for this study included all College of Education majors who had attended courses at Valdosta State University (VSU) during the 1993 calendar year and Winter quarter, 1994. From this population, three unique groups of students existed: remote-site distance learning students, host-site distance learning students, and traditional classroom students. The time frame for the population was chosen in order for the remote- and host-site groups to have numbers large enough from which to draw a sample. During these five quarters, the distance education environment remained virtually unchanged. Due to the large size of the population (N=1885) and the disproportionate number of students in the traditional classroom group, a stratified sample using the equal allocation method was chosen to obtain a sample. Using computer generated random numbers, 165 remote-site students, 165 host-site students, and 165 traditional classroom students were selected for the sample.

Selection of Questionnaire Items and Cluster Areas

Several survey instruments of related research projects (Baker & Hansford, 1990; Barker & Platten, 1988; Beare, 1989; Kabat & Friedel, 1990; Ritchie & Newby, 1989; Simmons, 1991; Wagner & Craft, 1988) were studied in order to identify possible questionnaire statements. Similar statements that appeared in several of these research instruments were listed. In addition, cluster areas or categories of statements were also listed. From the list of often used statements and the review of cluster areas used by other researchers, four distinct areas of student perceptions of distance learning courses were formed. The four cluster areas formed were: (a) physical learning environment, (b) student/teacher interaction, (c) course structure, and (d) overall course enjoyment/satisfaction. From the list of questionnaire statements identified from the research, five to six statements were selected for each cluster area. Statements were chosen based upon common use by other researchers, as well as the appropriateness of each statement for the study on student perceptions of the affective experiences encountered in distance learning courses at Valdosta State University.

A panel of experts including one research methodologist, one distance education instructor, one distance education student, and one distance education professional technician were chosen to assess the face validity of the questionnaire instrument. These panel members gave suggestions for improving misleading and/or unclear questions, wrote recommendations for additional statements that were not included on the proposed instrument, and made minor adjustments to the wording of several statements.

Reliability Measures of the Instrument

A series of steps were conducted to ensure that the questionnaire instrument was reliable. Reliability refers to the consistency or stability of the measuring device over time (Borg & Gall, 1989). A questionnaire instrument was given to 50 remote-site students, 26 host-site students, and 34 traditional classroom students. Instructions on how to complete the instrument were read to each group. Students completed the instrument in class. Students who comprised this pilot-test were deleted from the overall population of the study to avoid any bias.

Data obtained from this pilot test was used to measure the internal consistency of the questionnaire items. The Cronbach Coefficient Alpha statistical test indicated that the questionnaire instrument had an internal reliability of .8938. This number indicates that the instrument is highly reliable.

Collection of Data

The final survey instrument containing twenty-one statements, three open-ended questions, and demographic information was mailed to the research sample with a cover letter stating the purpose of the study and providing instructions to the respondents. Follow-up procedures for non-respondents included two post-card reminders and a mailing of a second survey instrument. A total of 346 instruments were returned for a response rate of 69.89%.

Analysis of Data

In order to describe perceptions of remote-site distance learning students, host-site distance learning student, and traditional classroom students, mean responses were determined for every question on the survey instrument for each of the three groups. In addition, an overall cluster mean was calculated for all questions in each of the four specific perception categories for each group of students. Once all mean responses of the three groups were determined, comparisons were made.

An analysis of covariance was conducted to determine whether differences exist between the perceptions of the three groups for each cluster area of questions: perceptions of student/teacher interaction, perceptions of course structure, perceptions of the physical learning environment, and perceptions of overall course enjoyment/satisfaction. The covariate age was used for the ANCOVA test to ensure that if a significant difference was found, this difference would not be due to age differences among the groups. The ANCOVA test is useful in causal-comparative studies because the researcher cannot always select comparison groups that are identical in all areas (Borg & Gall, 1989). "Analysis of covariance provides a post hoc method of matching groups on such variables as age, aptitude, prior education, and socioeconomic class" (Borg & Gall, 1989, p. 556).

If the ANCOVA test identified a significant difference between groups on any cluster area, pairwise t-tests were conducted on that cluster grouping to determine exactly which groups differed significantly. A t-test is a statistical test used to determine whether two means differ significantly from each other (Borg & Gall, 1989). Since this study contained three groups, three t-tests had to be conducted for each cluster area in which the ANCOVA test identified significant differences.

A level of significance of .05 was used for this study. This level was chosen because student needs are most important and the study hoped to identify any reasonable statistically significant difference in responses. A more liberal level could not be justified because of the dangers involved with misrepresentation of the population as a whole. An error of this kind could cause poor decision making and planning for future distance learning courses offered at Valdosta State University.

Results

Means were calculated for each cluster and for each individual question that comprised the survey instrument (see Table 1). Most notable results based on mean scores among the three groups dealt with the clusters overall course enjoyment/satisfaction and the physical learning environment. The traditional classroom group rated each of these questions higher than either the host- or remote-site groups. Also noteworthy, the host-site group rated seven of the ten statements comprising these two clusters the lowest. In particular, the host-site group rated questions dealing with "There were few distractions during class"; and "I would recommend that other students take similar courses from the College of Education" lower than either of the other two groups. The remote-site group rated the statement "I had a difficult time hearing the instructor during class" considerably lower than the other two groups.

Table 1. Overall Cluster Item and Individual Question Means for Each Cluster.

Student Teacher Interaction	Host Mean	Remote Mean	Trad. Mean
Overall Cluster Mean	3.24	3.16	3.20
Q1. I felt comfortable contacting the instructor outside of class.	3.41	3.31	3.33
Q5. I felt uncomfortable asking questions during class.	2.80	2.75	2.82
Q7. The instructor was responsive to students' needs.	3.34	3.32	3.28
Q12. Assignments and test were returned in a timely fashion.	3.31	3.17	3.23
Q16. The instructor encouraged student participation.	3.35	3.22	3.37
Overall Cluster Mean	3.03	3.14	3.27
Q6. I enjoyed getting to know fellow class members.	3.19	3.37	3.43
Q9. I enjoyed attending class.	3.00	3.17	3.25

Table 1. (continued)

Overall Course Enjoyment/ Satisfaction	Host Mean	Remote Mean	Trad. Mean
Q13. I had a sense of accomplishment after completing the course.	3.19	3.13	3.35
Q17. The method of course presentation kept my interest high through the entire course.	2.96	2.89	3.02
Q20. I would recommend that other students take similar courses from the College of Education.	2.84	3.13	3.29

Physical Learning Environment	Host Mean	Remote Mean	Trad. Mean
Overall Cluster Mean	2.86	2.89	3.18
Q2. The overall classroom environment was conducive to learning.	2.97	3.03	3.23
Q3. The physical surroundings of the room made it difficult to be attentive during class.	2.86	3.01	3.06
Q10. The visual aides used were easy to see.	2.92	2.93	3.14
Q14. There were few distractions during class.	2.42	2.67	3.18
Q19. I had a difficult time hearing the instructor during class.	3.15	2.81	3.23
Overall Cluster Mean	3.23	3.18	3.22
Q4. The instructor used class time effectively for meeting the objectives of the course.	3.25	3.24	3.32

Table 1. (continued)

Course Structure	Host Mean	Remote Mean	Trad. Mean
Q8. Examples and illustrations were effectively used by the instructor.	3.32	3.18	3.25
Q11. The amount of material covered was adequate for the credit received.	3.09	3.22	3.18
Q15. Course content was presented in a well-organized manner.	3.24	3.18	3.25
Q18. A variety of class activities were used to help present course content.	3.10	2.92	3.06
Q21. The course grading policies seemed fair.	3.36	3.35	3.27

An analysis of covariance, using age as the covariate, was conducted to determine if significant differences existed among the three groups (see Table 2). Significant differences were found between the physical learning environment and overall course enjoyment/satisfaction clusters.

Table 2. Overall Cluster Item Means and Adjusted ANCOVA Means by Group with ANCOVA F and P Values

	Host	Remote	Trad.		
	Mean Mean(Adj)	Mean Mean(Adj)	Mean Mean(Adj)	ANCOVA F	P Value
Student/Teacher	3.24	3.16	3.21	1.057	.349
Interaction	3.24	3.17	3.20		
Course	3.23	3.18	3.22	.177	.838
Structure	3.22	3.20	3.21		
Physical Learning	2.86	2.89	3.18	11.370	.000*
Environment	2.86	2.89	3.17		
Overall Enjoyment/	3.03	3.14	3.27	5.021	.007*
Satisfaction	3.02	3.18	3.24		

* Indicates a Significant Difference at .05

Pairwise post hoc t-tests revealed that both the host-site and remote-site distance learning groups rated statements dealing with the physical learning environment lower than did students in the traditional classroom group. For the overall course enjoyment/satisfaction cluster, pairwise t-test revealed that the host-site group rated statements significantly lower than did the traditional classroom group (see Table 3). Significant differences were not found among the student-teacher interaction and course structure clusters.

Table 3. Pairwise T-Tests for the Physical Learning Environment and Overall Course Enjoyment/Satisfaction Cluster

Physical Learning Environment Cluster	Mean	SD	t-Statistic	P Value
Host	2.8644	.609	-.38	.702
Remote	2.8942	.596		
Host	2.8644	.609	-4.44	.000*
Traditional	3.1790	.444		
Remote	2.8942	.596	-4.11	.000*
Traditional	3.1790	.444		

Overall Course Enjoyment/Satisfaction Cluster	Mean	SD	t-Statistic	P Value
Host	3.0342	.630	-1.32	.189
Remote	3.1385	.580		
Host	3.0342	.630	-3.19	.002*
Traditional	3.2705	.469		
Remote	3.1385	.580	-1.87	.063
Traditional	3.2705	.469		

*Indicates a Significant Difference

Themes Derived from Open-Ended Survey Questions

The survey instrument contained three open-ended questions. The questions dealt with what students liked best and least about courses taken from their respective location. Students were also asked what improvements could be made to make course experiences better. The following paragraphs outline common themes of responses among the three groups.

The remote-site group overwhelmingly stated that the biggest advantage of a distance learning course was not having to drive to campus to take a class. Students felt more comfortable being close to home in case of emergencies and safer not having to travel long distances at night. Several students in both the remote- and host-site groups described how they enjoyed being involved in a new type of instructional technology. Students in all three groups generally praised the instructors for being friendly, caring, and helpful.

Technical difficulties were by far the biggest dislike mentioned by both remote- and host-site students. Students described how time was wasted trying to get all remote-sites on-line. Equipment malfunctions occasionally caused long delays and poor audio and/or video reception. Many host-site students stated that some instructors concentrated on remote-site students to the exclusion of host-site students. Host- and remote-site students reported that remote-site students often did not pay attention, were rude, and disrupted fellow students by being noisy. Several remote-site students mentioned that they missed the personal contact with the instructor and fellow students and that they did not feel apart of the overall class. Several remote-site students also felt uncomfortable interrupting the instructor to ask a question.

Several suggestions were made by students in regard to improving the distance learning courses. A trained facilitator should be considered at each site to monitor the equipment, maintain classroom control, and help with the transfer of class materials. Faculty should be better trained on how to use the distance learning equipment and troubleshoot common problems. Better audio equipment should be purchased and more courses should be offered through distance learning.

Conclusions and Recommendations

The findings of this study supported other distance education research that indicated affective experiences encountered by distance learning students often differ from those of traditional classroom students (Barker & Platten, 1988; Learmont, 1990; Ritchie & Newby, 1989). However, these results should not be considered a measure of success or failure of the VSU distance learning program. It should be noted that although the host- and remote-site groups rated certain clusters of questions lower than the traditional group, they still had generally positive perceptions.

The results of this study have indicated needed areas of improvement in the distance learning program at Valdosta State University. Many remote-site students indicated difficulty hearing at the off-campus sites. Audio problems like the one at Valdosta State have also been noted by other distance education studies (Barker & Platten, 1988; Wagner & Craft, 1988). Both the remote- and host-site groups indicated many distractions caused by the distance learning equipment. Open-ended questions at the end of the survey instrument helped explain these problems. Downtime was the biggest problem. Many remote- and host-site students told of various equipment problems that interrupted class. Other distance learning students reported becoming frustrated due to lost class time spent making adjustments in the equipment to bring all sites on line properly. These distractions have been noted by several other researchers studying two-way interactive audio and video distance learning systems (Barker & Platten, 1988; Kabat & Friedel, 1990; Learmont, 1990). Host-site students were less understanding of these problems. Many host-site students did not feel they should have to endure these problems seeing no advantages for themselves. Beare (1989) found this same dislike by host-site students. Beare gave an account in which a host-site group spontaneously cheered when the system temporarily failed. Remote-site students were much more understanding stating that the reduced driving time more than made up for the few distractions caused by the equipment.

Efforts are continually being made at Valdosta State University to make improvements to the distance learning equipment. Technological advancements in this area are occurring rapidly. Information obtained from this study can better enable Valdosta State University to make informed decisions about needed equipment. In addition, faculty development workshops are being conducted to better prepare distance learning instructors with the methods needed to teach a distance learning class. Findings from this study have indicated that strategies need to be developed to improve the affective learning experiences of both remote- and host-site students.

In particular, measures should be taken to improve the host-site experience. Host-site students were quite clear in their dislike of attending a distance learning classroom. One recommendation would be to simply do away with the host-site group. The instructor could then focus entirely on students at the remote-sites. Host-site students could then attend traditional classroom courses and not have to undergo any of the distractions caused by a distance learning course.

Distance education programs have been shown to be effective in meeting the educational needs of rural and non-traditional students geographically separated from a college or university (Barker & Platten, 1988; Beare, 1989; Kabat & Friedel, 1990; Ritchie & Newby, 1989; Wagner & Craft, 1988). However, the majority of past distance education research has based "effectiveness" entirely on cognitive achievement. This study has indicated that the affective experiences encountered by distance learning students often differ from the experiences encountered by traditional classroom students and should be considered when evaluating a distance education program.

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TEACHER PREPARATION FOR WORKPLACE SKILL INSTRUCTION

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Abstract

This study's purpose was to identify teacher educators' views on preparing future teachers for delivering workplace skill instruction. Members of a national vocational teacher education association served as the research population. The 71 respondents to the survey instrument, using the V-TECS workplace skills duty areas as the framework, indicated their programs prepared future teachers well for "demonstrating technological literacy" and "seeking and applying for employment opportunities." Future teachers are least prepared to teach such workplace skills duty areas as "maintaining interpersonal relationships" and "adapting/coping with change." Recommendations were to incorporate organized curricu-lum for preparing teachers for workplace skill instruction.

Introduction

Various terms have been used to identify workplace skills. Miller and Usoro (1981) discussed affective workplace competencies. Luft and Schoen used the term nontechnical competencies while Foster, Engels, and Wilson (1986), and Buck and Barrick (1987) gave these skills the term employability skills. More recently, these skills have been termed workplace know-how by the Secretary's Commission on Achieving Necessary Skills (SCANS Report, 1991), workplace basics by Carnevale, Gainer, & Meltzer (1992), and workplace skills by the Vocational-Technical Education Consortium of States (1992). Invariably, when employers are asked what skills are most needed by employees, workplace skills will be the reply. The future of the business environment is dependent upon its workers possessing these workplace skills; and to be able to compete in the global environment successfully, those skills are vital (Foster, Engels, & Wilson, 1986). Little attention is placed on instruction of workplace skill in the classroom because more time is spent acquiring technical skills. Furthermore, little research has addressed how to prepare teachers to deliver workplace skill instruction.

According to research conducted and reviewed by Foster, Engels, and Wilson (1986), "employability (workplace) skills are sensitive and can be developed through educational intervention" (p. 177). According to Anderson-Yates, Coffman, and Baker (1992), little attention is placed on workplace skills development as teachers spend class time in developing student technical skills. Their research on Illinois vocational instructors revealed that a majority of instructors felt very prepared to teach such skills as "work behavior/work ethics" and "maintain working relationships". They were uncomfortable teaching such competencies as "identify and react to sexual intimidation/harassment" and "be creative to meet changing needs." Instructors reported using their own personal experiences to teach workplace skills and their college courses were of minimal assistance in preparing them to teach such skills.

Workplace skill competence represents a critical component reflecting the degree to which students will be successful in their chosen careers. In the educational reform movement, emphasis is being placed on the need to develop specific skills organizations are demanding. Reformers have also concluded that if education changes to meet this need, a positive "ripple-effect" will occur in the improvement of not only worker employment success and market productivity, but also in global competitiveness (Schlicting & Echternacht, 1994).

Purpose and Objectives

The purpose of this study was to determine business teacher educators' perceptions regarding the preparation of business teachers to teach workplace skills. Specifically, these research questions provided a focus for the study: (1) What workplace skills do teacher educators view as important to address in preparing teachers; and (2) Do teacher educators perceive graduates of teacher education programs as being prepared to provide workplace skills instruction?

Research Procedure

A descriptive research design using a survey instrument was used. Professionals involved in preparing future teachers were chosen as the population of the study. Specifically, members of the National Association of Teacher Educators for Business Education (NATEBE) were chosen as representatives of this population. The NATEBE is one of the affiliates of the Business Education Division of the American Vocational Association whose purpose is to plan, develop, and sustain programs for teacher education in business education. The 1996 membership list was used; members who listed high schools, community colleges, and business organization affiliation were excluded, resulting in 219 names used as the sample. The sample was adjusted to 183 after determining that certain members were not in teacher education positions. Of this adjusted sample, responses were received from 71 (38.8%).

The data gathering instrument was designed to elicit demographic information and to address specific workplace skill duty areas. These duty areas and competencies were derived from the validated list identified by V-TECS (1992). Teacher educators were asked to identify one business teacher education course currently taught or that had been taught in which workplace skills development could be addressed. Using a five-point Likert-type scale, they were then asked to indicate how frequently they addressed how to teach that workplace skill in the identified course. Respondents were further asked to indicate their perception of how prepared graduates of business education programs were to teach each of the specific skills in each of the workplace duty areas. They were also asked to identify what type of training or preparation they had regarding teaching of workplace skills. Respondent data were analyzed using frequencies, percentages, and means.

Selected Findings

The 71 survey respondents were balanced by gender (female = 38 and male = 33). The most frequently reported doctoral degree majors were business education (36 or 39.6%), vocational education (10 or 11%), and curriculum and instruction (8 or 8.8%). The title of professor or chair was reported by 32 (40.6%); associate professor by 17 (21.5%), and assistant professor by 10 (12.7%) .

Relating to research question 1 addressing the workplace skills that teacher educators view as important to address in preparing teachers, respondents were asked to identify a course that they have taught in which workplace skills instruction could be addressed. Respondents most frequently identified a methods/strategies class (36 or 50%) or a business communi-cation course (10 or 13.9%) as such a course.

Using the course they identified, they were asked to rate (scale of 5 to 1) how frequently they address teaching competencies within each workplace skill duty area. As reflected in Table 1, Duty Area K "demonstrating technological literacy" had the highest mean (4.2) and "maintaining professionalism" received a mean of 4.1. Duty areas with lowest means were "maintaining a safe and healthy environment" (2.6) and "accepting employment" (2.3).

Table 1
Respondent Frequency in Teaching Workplace Skills Instruction

Workplace Skills Duty Area	Mean Response
K. Demonstrating technological literacy	4.2
F. Maintaining professionalism	4.1
D. Communicating on the job	4.0
J. Demonstrating work ethics and behavior	4.0
H. Solving problems and critical thinking	3.9
M. Demonstrating team work	3.9
L. Maintaining interpersonal relationships	3.8
B. Seeking and applying for employment opportunities	3.4
E. Interpreting the economics of work	3.1
G. Adapting/coping with change	3.1
A. Developing an employment plan	2.9
I. Maintaining a safe and healthy environment	2.6
C. Accepting employment	2.3

Research question 2 asked whether teacher educators perceive graduates of teacher education programs as being prepared to provide workplace skills instruction. Using a scale of 5 to 1, respondents ranked such teacher preparation. Table 2 shows the duty areas for teacher preparation with the highest mean (4.1) was "demonstrating technological literacy." Duty areas for teacher preparation with the lowest means were "maintaining interpersonal relationships" (2.7), "adapting/coping with change" (2.4), and "maintaining a safe and healthy environment" (2.4).

Table 2

Respondent Perceptions of Business Education Graduates' Preparation to Teach Workplace Skills Instruction

Workplace Skills Duty Area	Mean Response
K. Demonstrating technological literacy	4.1
B. Seeking and applying for employment opportunities	4.0
D. Communicating on the job	3.9
F. Maintaining professionalism	3.9
J. Demonstrating work ethics and behavior	3.7
M. Demonstrating team work	3.7
H. Solving problems and critical thinking	3.5
C. Accepting employment	3.3
A. Developing an employment plan	3.1
E. Interpreting the economics of work	2.9
L. Maintaining interpersonal relationships	2.7
G. Adapting/coping with change	2.4
I. Maintaining a safe and healthy environment	2.4

Further, respondents were asked to identify the workplace skills duty areas in which they personally had received preparation/training. Table 3 reflects that "communicating on the job" was the most frequently identified (36 or 90%) duty area covered during in-service activities. Among the duty areas least frequently identified were "interpreting the economics of work" (10 or 25%), "maintaining a safe and healthy environment" (10 or 25%), and "accepting employment" (6 or 15%).

Table 3

Respondent In-Service Activity Topics for Workplace Skills Instruction (n = 40)

Workplace Skills Duty Area	Frequency	Percentage
D. Communicating on the job	36	90.0
H. Solving problems and critical thinking	32	80.0
L. Maintaining interpersonal relationships	32	80.0
G. Adapting/coping with change	30	75.0

F. Maintaining professionalism	26	65.0
K. Demonstrating technological literacy	25	62.5
J. Demonstrating work ethics and behavior	24	60.0
B. Seeking and applying for employment opportunities	11	27.5
A. Developing an employment plan	10	25.0
E. Interpreting the economics of work	10	25.0
I. Maintaining a safe and healthy environment	10	25.0
C. Accepting employment	6	15.0
M. Demonstrating team work	*	-

Note. * M was inadvertently left off the survey instrument.

According to Table 4, personal experience was the most frequently (66 or 97.1%) reported way respondents had personally learned about workplace skills. Least frequently reported methods were professional reading (2 or 3%), and various other ways (4 or 6%).

Table 4
Respondent Preparation to Teach Workplace Skills Instruction (n = 68)

Preparation	Frequency	Percentage
Personal experience	66	97.1
Work experience	60	88.2
College/University	49	72.1
Workshops/Conventions/Seminars/Conferences	8	11.8
Research	4	5.9
Professional reading	2	3.0
Human resource management training	1	1.5
Business contacts	1	1.5
Friend in public school supervision	1	1.5
Guest speaker in classes	1	1.5

Note. Three respondents did not answer. Therefore, the number is less than 71.

The majority of respondents (69 or 97.2%) agreed that workplace skills instruction should be addressed in the preparation of teachers. A majority (58 or 81.7%) agreed as well that workplace skills instruction should be incorporated into all teacher preparation courses. Only 10 (14.1%) agreed that workplace skills instruction should be taught as a separate course.

Conclusions and Recommendations

Research findings support the conclusions that teacher educators: (1) address the workplace skill duty areas of "demonstrating technological literacy" and "maintaining professionalism" most often; (2) perceive graduates of business teacher education programs to be well prepared to teach the workplace skills duty areas of "demonstrating technological literacy" and "seeking and applying for employment opportunities"; (3) were prepared to teach workplace skills instruction primarily through their personal experiences; and (4) believe that workplace skills instruction should be incorporated into all teacher preparation courses rather than offered as a separate course.

Recommendations include: (1) Teacher education programs must be reviewed to determine how curriculum is designed to prepare teachers for workplace skills instruction; and (2) further research should be conducted to compare views of teacher educators with graduates of those programs.

Much work and creative effort lie ahead for all educators in attempting to educate and train members of the labor force so they can work to their fullest capacity. Such investment in human capital is imperative if this nation plans to stay economically competitive. Educators must tackle this tremendous challenge--and help rebuild part of the basic foundation of this country. And teacher educators must take the leadership to assure that educators are prepared to accept this most important challenge.

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LESSONS LEARNED FROM AN ANALYSIS OF YOUTH APPRENTICESHIP PROGRAMS

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Abstract

The need to prepare more workers with the skills and knowledge to sustain a high wage-economy has focused attention on youth apprenticeship as a policy strategy for improving the school-to-work transition for many youth in the United States. In 1992, the Georgia General Assembly passed legislation establishing the legal basis for developing youth apprenticeship programs in the state. This study assesses the implementation of youth apprenticeship programs, including school- and work-based program elements, and information relevant for the development of youth apprenticeship programs on a larger scale.

Introduction

Spurred by changes in the US and world economies and the educational environment there has been increased attention placed on the importance of preparing youth for the workforce of the future. Of major importance to educators and policy makers is how to promote the transition from education to high skilled employment for all students, and particularly those who are unlikely to attain a baccalaureate degree.

The need to prepare more workers with the skills and knowledge to sustain a high-wage economy has focused attention on youth apprenticeship as a policy strategy for improving the school-to-work transition for many youth in the United States. Youth apprenticeship has been defined as a "learning program for young people, age 16 and older, that integrates on-the-job learning with school-based instruction, that bridges high school and post secondary school, and that results in both academic credentials and certification of mastery of work skills" (JFF, 1993, n.p.).

Georgia Legislation

In 1992, the Georgia General Assembly passed Georgia Code #20-2-161.2 establishing the legal basis for developing youth apprenticeship programs in the state. This law directed the Georgia Department of Education, in collaboration with the Departments of Labor and

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Technical and Adult Education, to develop policies, procedures and standards necessary to implement youth apprenticeship programs for all state school systems by 1996.

In developing guidelines for youth apprenticeship programs in the state, the Department of Education expected all school systems to implement programs that have a well-defined occupational focus beginning in grade 11, but that are sufficiently broad so that students can, at the end of high school, choose from a variety of career options, including employment and post secondary education. The programs would also have coordinated school- and work-based components and lead to both a high school diploma and an approved certificate of occupational skill mastery. In addition, school systems were expected to ensure that decisions about program design were made by a broad-based group of stakeholders, including teachers, counselors, and administrators from secondary and post secondary institutions, as well as representatives from the employer and labor communities. Systems were also to coordinate school and work-site learning through joint planning efforts of teachers and employers in developing the school-based curricula.

Purpose and Objectives

The purpose of this study was to organize appropriate information that supports measurements of performance and information-sharing on implementation strategies and best practices of youth apprenticeship programs in the state. The study had two primary objectives. First, to describe youth apprenticeship programs funded under Georgia legislation. This includes documenting the number of these programs, their characteristics, the institutions involved in youth apprenticeship consortia, the extent to which the programs include the full array of ideal features, the populations they serve, and the approaches the local consortia use to measure the progress of program development. Second, to identify effective practices. The approaches taken by local systems that have implemented major components of the youth apprenticeship concept successfully are documented to help other local school systems and consortia identify strategies for overcoming commonly encountered problems.

Procedures

In the 1994-1995 school year, 24 school systems received implementation grants to establish youth apprenticeship programs. These "pilot" programs in youth apprenticeship were selected through a competitive grant program (Smith, Bouchell, Clark, & DeHart, 1995). The youth apprenticeship program was expanded in the 1996-1997 school year to 68 school systems or consortiums through the same grant procedures. This study assesses the implementation of these youth apprenticeship programs, including school- and work-based program elements, and information relevant to the development of youth apprenticeship programs on a larger scale.

Population

Sixty-eight school systems were awarded funding grants for the 1996-1997 school year by the Georgia Department of Education. Fifty-six systems (82.35%) provided data for this study, but not all of these systems provided complete data since they were in the initial implementation phase.

Data Collection

Profile baseline data on youth apprenticeship programs in the state was collected from youth apprenticeship program administrators or coordinators. Five data collection surveys were modified from the initial study of youth apprenticeship programs in Georgia (Smith et al., 1995) and provided to each youth apprenticeship coordinator for completion.

Data was collected from individual youth apprenticeship program administrators or coordinators and reflects their responses as provided to the project staff as of February 1997. Accuracy of the data rests with youth apprenticeship program administrators who reported the data and not with the researcher. All attempts for accuracy of information were made by the researcher including verification of information with individual youth apprenticeship program administrators or coordinators.

Analysis of Data

Information for this study was collected during the 1996-1997 academic year through data provided by local youth apprenticeship administrators or coordinators. The data presented in this study consists of descriptions and analyses of youth apprenticeship programs, rather than measurements of program impacts and outcomes since the programs are in various stages of development. Program impact and outcomes will not be available until a cohort of students has completed the entire cycle of the program and has entered into the full-time workforce in the next two to three years.

Results

Results from this study are organized to provide a description of youth apprenticeship programs at the local level, characteristics of students enrolled in the program, and implementation of key components of the program.

State Youth Apprenticeship Program Profile

Individual youth apprenticeship program development is at the discretion of each local school system and the youth apprenticeship program administrator or coordinator. The development of a viable youth apprenticeship program requires unique partnerships and the development of a collaborative team for program planning and implementation in which to provide a career focus.

Youth Apprenticeship Program Partners

Youth apprenticeship programs require partnerships between secondary schools, employers, and post secondary institutions (two-year institutions such as community colleges and technical institutes, as well as four-year colleges and universities). Third party agencies such as employer groups or chambers of commerce are not necessary for a youth apprenticeship program, but may play a major role in the development and implementation of the program. These intermediary organizations can serve as a conduit for bringing educators, parents, and employers together as well as providing technical assistance to schools and businesses.

Educational partners. High schools or school districts are instrumental in initiating and implementing youth apprenticeship programs. A total of 147 secondary comprehensive high schools are participating in the state's youth apprenticeship programs.

A number of sites have developed or are in the process of developing programs with post secondary education components that are formalized through articulation agreements between the high schools and post secondary education institutes. The most predominant educational partner identified by youth apprenticeship program coordinators are the state's technical institutes. This relationship is due to the need for increasing a student's opportunity to purse a technical education and a two-year degree or certificate.

Third party agencies. Third party agencies have played important roles in several youth apprenticeship sites in initiating and developing the program. Their involvement has ranged from assisting with the design of the overall program model to bringing schools and employers together, as well as providing technical assistance. Invariably, these intermediary organizations play a role in recruiting employers. Local chambers of commerce were cited most frequently (N=23) as a local business and industry partner.

Career Focus

In establishing a local youth apprenticeship program, appropriate occupational career foci should be developed based on secondary and primary data on local employment opportunities. The occupational career focus areas designed for programs of study in Georgia include: Art and Humanities; Business, Marketing and Information Management; Environmental and Agricultural Sciences; Health and Medical; Human Services; and Technical and Engineering.

Sixteen of the implemented youth apprenticeship programs did not target specific industries or career focus areas, but rather opted to provide preparation for students for a variety of occupations (referred to as multi-occupational) in all six career focus areas. Twenty-six youth apprenticeship programs offered preparation in either five career areas (n=2), four career areas (n=11) or three career areas (n=13). Those youth apprenticeship programs targeting two career focus areas (n=9) or one career focus area (n=5) utilized the Technical and Engineering career area as their major focus.

Student Participation in Youth Apprenticeship Programs

Advocates of the youth apprenticeship program foresee large numbers of students being served, yet there are a number of constraints that may limit program growth. Factors, such as the choice of occupation and the degree to which program administrators or coordinators seek motivated students who meet program criteria will affect program size. External factors, particularly the number and types of local employers with a demand for the career focus area occupations will also affect the size of the youth apprenticeship program.

Student Enrollment

Student enrollment in youth apprenticeship programs as of February 1997 totaled 1,089 students. The student population is composed of 512 males (47.02%) and 577 females (52.98%). Grade classifications of youth apprenticeship students were reported as: 43 students (3.95%) were classified as sophomores (10th grade), 333 (30.58%) as juniors (11th grade), and 713 (65.47%) were seniors (12th grade). No freshmen (9th grade) students were reported to be enrolled in the youth apprenticeship programs.

Career Focus

Students (N=1,089) enrolled in the youth apprenticeship programs were identified as to their occupational specialization in the six career focus areas: Art and Humanities (n=21), Business, Marketing and Information Management (n=206), Environmental and Agricultural Science (n=15), Health and Medical (n=306), Human Services (n=131), and Technical and Engineering (n=410). Male students were predominantly enrolled and employed in the Technical and Engineering career focus area (n=365), while females were primarily enrolled and employed in the Health and Medical (n=254), Business, Marketing and Information Management (n=151), and Human Services (n=106) career focus areas.

Student Identification and Eligibility Criteria

Youth apprenticeship coordinators have developed specific eligibility criteria based on input from local businesses and education program partners. The most common eligibility criteria cited was an acceptable grade point average (i.e., a "C" average on all course work or better), academic standing or being "on-track" for graduation, attendance and discipline records, recommendations from local teachers, and a stated career interest.

Even though each youth apprenticeship program is open for all students to apply for the program, not all students who actually applied to participate in the local youth apprenticeship programs were accepted. Reasons for not accepting potential students include the unavailability of suitable training sites and slots within local businesses and industries within a career focus area or potential students did not meet an employer's criteria for employment.

A majority of youth apprenticeship programs also reported having some type of provision for "screening" of students prior to initial placement in a work-based learning (employment)

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position and subsequent final enrollment in the program that also reduced the number of students who may have been eligible for the program. Screening procedures varied by youth apprenticeship program and participating employers. In some youth apprenticeship programs, employers relied on the professional integrity and decision of the youth apprenticeship coordinator to select students for a specific employment opportunity; while in other youth apprenticeship programs, the local business and industry employers played a dominant role in selecting students for the program and the work-based learning placements. Screening techniques include job interviews, the use of criteria set by employers based on grades and attendance, and trail periods at the work site.

School-Based Learning in Youth Apprenticeship Programs

The school-based learning component of the youth apprenticeship program is intended to prepare students in several ways: (a) students are expected to develop the basic skills, occupational competencies, and broad employability skills required for successful entry into employment; (b) students are expected to become more engaged in learning and acquire skills more readily, as a result of improved teaching methods emphasizing hands-on, contextual learning that is relevant to students' career interests, and work-based experiences; (c) students are expected to receive career guidance that helps them identify career interests and encourages them to develop educational plans to meet their career goals; and (d) program arrangements are expected to promote student entry into post secondary education.

Curriculum

The school-based curriculum, both in content and pedagogy, is a key component in promoting the kinds of learning and outcomes basic to the youth apprenticeship program. The curriculum content in the youth apprenticeship programs varies significantly, not only in the career focus areas targeted but also in the emphasis on vocational skill development, the extent of integration between academic and vocational education, and the linkage to work-based learning.

Not all youth apprenticeship programs have a defined curriculum for participating students. Some programs require enrollment in a vocational course but have no requirements for enrollment in particular academic courses. Other programs have a more structured sequence of courses specific to the program. As a result, each youth apprenticeship site varies in the implementation of the school-based learning portion of the program. School-based learning courses identified include pre-employment instruction (either a workplace readiness course or a workplace orientation seminar) as well an enrollment requirement in a vocational course at either the secondary or post secondary level or enrollment in a business/industry sponsored course.

As a prerequisite to formally entering the youth apprenticeship program, 19 (33.93%) of the 56 reporting systems have initiated a "workplace readiness" course for students. This course includes an overview of the requirements of the program, occupational options, wages, and employment expectations of the career focus area(s). Seventeen (30.36%) of the youth apprenticeship programs conduct workplace orientation seminars for students, held either at the school or the work site, as part of the school-based learning portion of the program.

The youth apprenticeship programs differ in the extent to which they emphasize vocational education, both in terms of board and specific technical skill training. These differences appear related to the career focus areas in which students are engaged in work-based learning. Programs utilizing a multi-occupational career focus or emphasizing the human services career area are less likely to include vocational course work as part of the curriculum (e.g., Human Services focus students may enroll in an Introduction to Education course). In 19 of the youth apprenticeship programs, students are not enrolled in either a vocational curriculum or course designed for the career focus of the program on either the secondary or post secondary level; thus there may be little linkage between the vocational course content and the activities of the workplace.

Programs preparing students in the career focus areas of Technical and Engineering, Business, Marketing and Information Management, and Health and Medical almost all require specific vocational courses (e.g., Health and Medical career focus students enroll in a Health Occupations course). Thirty of the youth apprenticeship programs engage students in vocational courses at either the local secondary school or a post secondary institution that assures some integration of academic and vocational skills, satisfaction of high school graduation requirement, competencies required to meet industry skill standards, and terms of articulation agreements for formal advanced standing or transcripted credit for post secondary education.

Integration of Learning

The integration of academic and vocational learning is an important aspect of the youth apprenticeship curriculum and a variety of techniques are being utilized to achieve this objective. The most frequently cited strategy for integrating academic and vocational education has been the development (or purchase) of curricula that enhance the occupational context of academic courses (i.e., English, science, mathematics). These "applied" courses are part of the larger educational reform effort in a majority of school systems to implement the technical-preparation curriculum. A few youth apprenticeship sites have developed applied academic curricula that relate to a career focus area. In one site, Health and Medical career focus students are grouped together for an academic course in science; but this is not reported as the norm.

The extent to which the youth apprenticeship programs' school-based curricula are integrated effectively to work-based learning experiences appears to be limited. Some youth apprenticeship coordinators purport that a student's enrollment in a vocational course represented integration of school- and work-based learning since the vocational curriculum may involve some of the tasks that the student may be performing in the work site. A few youth apprenticeship coordinators cited that the integration of work-based learning with the school-based curriculum is being achieved through some academic course assignments being related to the duties of the workplace or through the work-based training plan.

Career Guidance

Career guidance and counseling are important parts of a youth apprenticeship program. In many cases, students must make a real commitment to the youth apprenticeship program and therefore to a career focus area and even an occupation. Many youth apprenticeship programs may not have focused on career guidance and counseling because the program administrators or coordinators have assumed that students have already made career selections when they enroll in the program.

Post Secondary Education Articulation

One way to improve the school-to-work transition of young people involves encouraging them to purse advanced training and education at the post secondary level. Employment prospects for students with higher-level skills and credentials are significantly better than for those with only a high school degree. Recognizing the benefits to students of post secondary education, youth apprenticeship sites are incorporating linkages to technical institutes or other educational institutions within the state. Most programs are in various stages of development and have linked with articulation agreements already in place.

Efforts to promote post secondary education and training has taken many forms. Several of the youth apprenticeship sites encourage high school participants to "dual" enroll with a post secondary institution to receive academic credit toward a post secondary degree or certificate as well as fulfilling secondary course requirements. Where such agreements exist, the educational partners have been able to fit their curricula together to some extent, raising the standards of high school courses and reducing the redundancy of technical courses. Developing these agreements requires the youth apprenticeship coordinator and local administration to work with the post secondary institution(s) to examine both school-based and work-based learning components to assess how content matches up to vertically and horizontally align the curriculum.

Work-Based Learning in Youth Apprenticeship Programs

Work-based learning is a planned job training experience that utilizes business and industrial sites for training as part of the youth apprenticeship program. The work-based learning portion of the program is ideally designed so that students are provided paid work experience under the supervision of a mentor and includes a formalized sequence of training that leads to progressively higher skills and wages.

Work-Based Learning Components

For work-based learning in a youth apprenticeship program, specific quality control factors must be incorporated within the program design to include, among other standards, planned work activities, a progressive job, employer involvement, and frequent evaluation and follow-up. These factors may comprise a cause-and-effect framework for effective work-based learning; that is, if the quality control factors are implemented, then important outcomes can be achieved by the youth apprenticeship students. A vast majority of the reporting youth apprenticeship program sites have implemented these specific quality control factors into the work-based learning portion of the program.

Training agreements and plans. Though all reporting youth apprenticeship sites reported having training agreements and plans for work-based learning, problems were cited by many of the youth apprenticeship coordinators. Specifically, youth apprenticeship programs and participating employers seem to emphasize the work experience part of the program rather than structured and progressive skill development integrated into school-based learning. Students may not be involved in a carefully planned program of guided learning to ensure that they master specific skills.

Work-based mentor. An integral part of the work-based learning component is a supportive adult, referred to as a mentor, who is linked with the youth apprentice. As reported by all youth apprenticeship coordinators, each student in the youth apprenticeship program has been assigned a workplace mentor. To assist the work-based mentor in providing quality educational experiences for youth apprentices, a mentor orientation and training session are usually conducted. Thirty-seven of the reporting youth apprenticeship coordinators provide formal mentor training sessions. An additional eight sites reported providing informal mentor training on an individual basis upon request of the work-based mentor. The remaining sites either do not conduct a formal or informal mentor-based training session or are in the process of planning to conduct such training. Several youth apprenticeship coordinators have developed mentor handbooks that are given to individuals in place of either a formal or informal training session.

Academic credit. When a student's performance at a work site is evaluated, the evaluation is frequently used to determine a grade for the work-based learning and academic credit is earned by the student toward meeting graduation requirements of the secondary school. The majority of youth apprenticeship programs follow, for the most part, the guidelines established for cooperative education programs in the state to award course credit for the work-based learning experience.

Paid work. Local youth apprenticeship program personnel and employers should determine the appropriate number of hours of work-based learning based on the requirements of the career focus area. The amount and intensity of workplace learning opportunities that students receive in the youth apprenticeship programs vary greatly. Experiences of students in work-based learning range from short-term, unpaid job shadowing to paid part-time employment. Students average as little as 10 hours per week at the work-based learning site to 30 hours per week. The average number of hours that students in youth apprenticeship programs are engaged in work-based learning is 19.79.

The employer must agree to remunerate youth apprenticeship students at the state minimum wage or higher wage as agreed upon by the employer and the youth apprenticeship coordinator. A progressive wage scale is encouraged and should be based on the student's performance and evaluations. Wages, where reported, range from $4.25 per hour (an amount below the federal minimum wage of $4.75 per hour) to a high of $7.50 per hour, with an average wage rate of $6.47 per hour for youth apprenticeship students.

Rotations. To ensure that work-based learning fosters the development of broad, transferable skills that expand rather than restrict students' career and educational options a variety of experiences should be afforded. Even though a majority of youth apprenticeship sites reported that rotations (either internal within a business or external between several businesses) were occurring for youth apprenticeship programs several concerns were noted by the respondents.

Evaluation. Assessment of student learning is a critical component of the work-based learning portion of the youth apprenticeship program. The method reported by almost every youth apprenticeship coordinator was to assess student learning at the workplace in a written evaluation of student performance by the work-based mentor during each grading period (i.e., every 6-weeks, every 9-weeks) of the academic year. In almost all reporting sites, these ratings of the student performance were used as a basis for establishing a grade for the awarding of academic credit by the local school.

Employer Participation

Barriers noted by youth apprenticeship coordinators in gaining employer participation in the program were the cost of supervising and training students, cost of students' wages, high student turnover rate, insurance costs, weak academic skills of some students, maturity and motivation of some students, and federal or state regulations. These barriers may have significant implications for programs' efforts to expand employers' participation.

Conclusions And Recommendations

The 56 youth apprenticeship programs providing data for this study are all in varying stages of development and implementation of the school-based, work-based and connecting activities that define the program. As the state of Georgia implements additional programs of youth apprenticeship into other school districts, the lessons learned from these initial programs should be reviewed to avoid some of the "pitfalls" that have been experienced. Considering data collected from both surveys and informal visitation to youth apprenticeship program sites the following observations about the implementation of the youth apprenticeship concept into Georgia public schools are provided.

1. Consideration should be given to grouping students together who are placed at work-based learning sites in a particular industry or career focus area in key academic and vocational classes to enhance the integration of academic and vocational learning as well as the coordination between school- and work-based instruction.

2. The role and involvement of post secondary institutions and personnel, regardless of the type or level of post secondary institution, must be extended to provide youth apprenticeship

students with access to a broad range of opportunities after their secondary education is completed.

3. If youth apprenticeship programs are to increase in the number of students to be served, a large number of employers must be recruited to provide work-based learning positions for students.

4. The participation of employers to provide quality paid training and experiences for students is a critical element that needs to be given additional emphasis by all individuals associated with the youth apprenticeship program.

5. Career guidance and counseling needs to be expanded to assist students in developing an appropriate career focus and understanding of the youth apprenticeship program.

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CAROUSEL PRESENTATIONS

Evaluating and Improving Tech Prep: The Minnesota Self-Assessment Model

Purposes

1. To present a proven model for self-assessment of TechPrep program which focuses on improving the quality of such programs to meet the needs of students.
2. To present a methodology for developing such a model to meet the unique needs of other states or localities.
3. To present the technical research issues which must be faced in developing such a system.

Brief Discussion of the Topic

Although the need for comprehensive evaluation and feedback on the effectiveness of Tech Prep initiatives as a basis for program improvement has been recognized, few proven evaluation models have been available. Often the models that are available are being criticized for their almost sole focus on outcome measures such as enrollment and job placement Vocational Training, Vol. 28, No.9, February 27, 1997). While outcome data are important, they are often not sufficient to determining how to improve programs to better meet the needs of students.

The Minnesota Tech Prep Self-Evaluation System was developed and tested to partially fill this void. It was developed based upon the program improvement principles of Deming and Juran, and patterned after the Malcolm Baldrige Award and the Minnesota Quality Award programs. The System has been tested with 17 Minnesota Tech Prep consortia over a two year period and found to be effective for evaluating past efforts and for identifying specific areas needing improvement at both the local and State levels. It was also found effective in promoting dialogue among those involved with Tech Prep implementation leading to shared understandings and perceptions which informed people about how they might improve practice.

This carousel is focused on the methodologies underlying how such an evaluation system might be planned and implemented within other states or TechPrep consortia. Such systems require substantial collaborative and consensus making activities as well as clarity of goals. They also require synthesizing information and feedback of information in ways that can facilitate improvement. In addition to questions regarding what data and how the data will be used, there are many technical questions regarding data definition, data gathering, and data analysis which must be considered. This carousel will address the processes of developing a quality TechPrep self-evaluation system from both a data needs and technical point of view. It will also present sample information that have been gathered and how it might be used in decision making to improve TechPrep programs to make them more effective in addressing the needs of student.

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TEACHER CHARACTERISTICS AND ACTIVITIES THAT CONTRIBUTE TO STUDENTS' SCHOOL-TO-WORK TRANSITION

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Abstract

The current school-to-work transition movement in the United States has placed new demands on educators to provide school-based and work based learning and organizing linkages between the school and the workplace. Unfortunately, little is known about the expertise teachers must have to function successfully in this new educational context. This research focused on identifying and delineating teachers' involvement in and contributions to school-to-work transition. The study builds on recent conceptions of professional development in an era of educational reform and is grounded in a professional development framework that includes four phases: needs, focus, delivery, and impact. Information was gathered via community profile studies. A total of 199 educators, workplace representatives, and community members were interviewed at 11 communities, each in a different state. Analysis centered on identifying meaningful themes associated with teachers' school-to-work involvement and contributions. Teacher contributions to school-to-work success could be organized into 10 different themes that focused on a wide range of school-based, work-based, and linking activities. Twelve themes were identified that reflect characteristics teachers should have to conduct successful schoo-to-work programs. A matrix was created that reflects how teacher contributions and characteristics interface to better identify teachers' needs. Implications for change to progessional development programs are also provided.

Perceptions on Delivery of Biotechnology Instruction

Substantial attention has been focused on the need to expand and enhance the study of the bio-related technologies in secondary education. In 1991, Savage & Sterry identified bio-related technology as a cornerstone of the technology education curriculum. In 1992, the Kentucky Committee for Industrial Teacher Education recommended that bio-related systems be included in a comprehensive technology education program. Then in 1996, The Kentucky Department of Education identified Bio-Related Systems as a recommended high school technology education course. For this purpose, bio-technology has been defined as using plants, animals, or microbes to produce or modify species, processes, or products.

Less than nineteen percent (19%) of teachers reported that bio-technology is currently taught at their school, with only five percent (5%) believing bio-technology should not be taught at their school. Seven content organizers in rank order from highest to lowest were (all were rated above 3 on a 5 point scale of importance) 1) environment/pollution, 2) energy development, 3) medicine/drugs, 4) foods/beverages, 5) agriculture, 60 manufacturing, and 7) diagnostics/forensics. Five topics for inclusion within each organizer in rank order were (all were above 3 on a 5 point scale) 1) career opportunities, 2) impacts on people, society, culture and environment, 3) limitations and advantages of technological solutions, 4) bio-ethics issues, and 5) history of technological development. Interdisciplinary integration, open-ended problem solving, data collection/analysis, and reading/applying technical information all were ranked above 4 in importance on a scale of 1 to 5.

Teachers indicated that medicine/drugs, environment, and foods/beverages were the most attractive bio-technology content organizers to female students. Emphasis on 1) career opportunities, 2) impacts on people, society, culture and environment, 3) integration of computer applications, and 4) discussion of bio-ethics issues were described as most likely to attract female students to study of bio-related technologies.

Most responding teachers (73%) said bio-technology should be taught as one or more units within a course rather than as separate courses. Teachers believed that the lead roles for inclusion of bio-technology should come from the science and agriculture teachers with technology education teachers less likely to be bio-technology teachers. Seventy three percent (73%) responded that science and/or agriculture teachers should teach bio-technology, while only twenty four percent (24%) indicated that technology education teachers should be involved. Fifty eight percent (58%) of responses were for inclusion of bio-technology instruction in grades 10, 11, or 12 although many technology education teachers favored middle school grade levels. Asked what support was most needed to get bio-technology offered or expanded at their school, teachers most often responded, instructional modules (23%), followed by teacher training (21%), activity/laboratory manuals(15%), and curricula frameworks (14%).

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LINKING THE NCTM *STANDARDS* AND CAREER CURRICULA: IS YOUR SCHOOL READY?

What organizational supports are necessary to establish interdisciplinary curriculum development efforts featuring integrated mathematics/career curricula? In the rush to join the bandwagon of integration we often forget to ask critical questions to make informed decisions before launching interdisciplinary efforts. For instance:

- To what extent is your mathematics curriculum aligned with vocational-technical education courses?
- To what extent are mathematics and vocational-technical teachers in your school knowledgeable of each other's reform movements (e.g., NCTM Standards, STW principles)?
- To what extent are mathematics and vocational-technical education teachers collaborating in integration efforts?
- To what extent is your school committed to implementing school-wide reform linking academic and vocational education?

Reflecting on these and other pertinent questions will allow you to develop a better understanding of our organizational context and then develop a strategic plan to promote educational reforms with realistic goals. It is essential to understand the status of institutional processes, practices, and quality of outcomes to establish an informed framework for change. The goal is to objectively establish where your organization is as a preliminary step to decide on the scope and nature of your integration efforts.

The purpose of this session is to provide mathematics and vocational-technical instructors, administrators, and school partners interested in advancing the development of integrated mathematics/career curricula with an opportunity to reflect on where they are in their local integration efforts. Participants will be asked to complete a "quick-&-dirty" exercise to get a hint of readiness for integration. This will involve a 10-minute questionnaire designed to determine your local organizational support system for integration efforts. Based on this exercise and subsequent discussion, participants will determine the extent to which they are ready to:

- Shift from traditional bureaucratic systems to participatory organizations supporting interdisciplinary collaboration linking mathematics and vocational-technical education.

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Model Preservice Teacher Education Program for Agricultural Education

When developing or revising the preservice teacher education curriculum, NCATE standards for teacher education should be addressed. According to NCATE, teacher education programs should be high quality professional education programs derived from conceptual frameworks that are knowledge-based, articulate, shared, coherent, consistent with the educational mission, and continually evaluated.

NCATE standards recommend preservice students complete coursework and experiences in three areas: (1) general studies courses, (2) content studies, and (3) professional and pedagogical content.

In redesigning a proposed preservice teacher education curriculum, it is recommended a preservice program that consists of 133 semester hours of coursework in the areas recommended by NCATE: 46 semester hours in general studies courses, 50 semester hours in content studies, and 37 semester hours in professional and pedagogical studies.

Specific courses recommended for the preservice program includes:

- Leadership Development and Work Experience in Agriculture - designed to address preparing youth for leadership and career responsibilities after graduation from school.
- Laboratory Management in Agricultural Education - designed to teach students how to effectively manage a variety of labs in agricultural education (mechanics, agriscience, greenhouse, and land labs).
- Curriculum Development in Agricultural Education - developing courses of studies, unit plans, and lesson plans for teaching agricultural education
- Psychology of Learning - studying the principles of learning and how the learning process affects how students grow and develop as learners.
- Working With Exceptional Children - provides a survey of exceptional learners to include a discussion of their characteristics and a review of historical approaches to their education and contemporary practices.

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A QUALITATIVE EVALUATION OF TEMPLE UNIVERSITY'S PROGRAM VITAL, A FIELD-BASED, PERFORMANCE-BASED VOCATIONAL TEACHER EDUCATION PROGRAM

Temple University's Program VITAL (a field-based, performance-based vocational teacher education program) provides the means to determine the suitability of the Howey-Zimpher conceptual lenses, developed in a preservice environment, to illuminate aspects of an alternative vocational teacher education program. The lenses, embedded with subquestions, explore program characteristics:

1. What is the degree of specificity about outcomes of the teaching Program?

How do students articulate the goals of the program?
What is the faculty conception of schooling and teaching?
How are students perceived by cooperating teachers?

2. What are students' and faculty members' attitudes toward an identification with the Program?

How do students see the rigor of their professional education curriculum compared to their general studies?
How does the faculty exhibit a feeling of ownership and collegiality?

3. What is the Program structure?

How do students address core teaching skills across different subject areas?
How is time and space provided for reflectivity?
What is the scope and sequence of the program design?
What is the relationship between course work and field experiences?

4. What are the references within the Program to accepted knowledge and ongoing research about good teaching?

How is a knowledge base for teaching expressed by students?
What are the linkages to research and development among faculty?

5. What are the arrangements for students' passage through the Program?

What is the network of personal support for students?
What is the accountability system for faculty?

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A LONGITUDINAL STUDY OF CLASSROOM PROBLEMS AND STRATEGIES

The study encompassed five school years from 1991-1996. Over the five years, 145 student teachers completed the teacher certification program at the University of Arkansas in the area of Vocational Education. They were asked to complete an open-ended questionnaire during the 12 weeks of the experience to identify those classroom problems they were experiencing as well as to document how well they believed they handled the problems. The open-ended questionnaire was comprised of two statements: "This week, I handled this discipline problem most successfully by reacting in this way." and "This week, I handled this discipline problem least successfully by reacting in this way." The student teachers were asked to write a weekly entry in response to each statement. The study had two purposes: (1) identify classroom management problems faced by student teachers and (2) to obtain information regarding the successful and unsuccessful strategies employed by the student teachers.

The student teachers were in the areas of business education, family and consumer science education, and industrial and technical education. None of the students had completed a classroom management course, but they were introduced to theories and techniques of classroom management in their professional education classes.

For the years 1991-1996, student teachers encountered many diverse examples of student behavior during their student teaching experience. The ten most serious classroom discipline problems as reported by the student teachers were: disruptive behavior, talking, showing disrespect, not paying attention, refusal to do assigned work, swearing, cheating, arriving late, cutting class, and smoking. The most successful strategies reported were: advise students to do other work after class, ask offender to get on task, move near offender, confiscate materials, ask offender questions, and to assist student with personal problem. The least successful strategies reported were: using poor classroom management decisions and not doing anything.

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